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INCISIONAL HERNIA*

Analysis of Three Hundred Cases

BY CHARLES D. BRANCH, M.D.†

THE incidence of incisional hernia is sufficiently frequent to render it a serious complication of abdominal surgery. Homans[1], in 1887 estimated that hernias followed at least 10 per cent of laparotomies. Since that time, the progress of aseptic surgery, the evolvement of abdominal incisions which cause less trauma to nerves and muscles, and the increasing care with which incisions are closed have led to a decrease in the occurrence. Stanton[2], in 1916, reported twenty-four postoperative hernias following 500 laparotomies, an incidence of 4.8 per cent. Moschcowitz[3] in the same year found no evidence of hernia in a small series in which transverse incisions had been used. In 1924 Watson[4] quoted Rouffort as stating that there was an incidence of .33 per cent in 1506 cases of transverse incisions which he had collected from the literature. Craig[5] in 1927 analyzed a series of 7672 laparotomies and found that seventy-nine postoperative hernias had occurred in the 78 per cent that were followed, an incidence of 1.3 per cent.

Garlock[6] reported the results following appendectomy in which different techniques of closure were employed. There were 634 cases which he divided into four groups. The first of these included 264 operated upon through a McBurney incision with drainage of the wound. There were no sutures used in the fascia or skin. The follow-up showed that a hernia had developed in seventeen, an incidence of 6.4 per cent. In contrast to this group there were 104 cases treated identically with the exception that the fascia, skin or both had been sutured. Twelve, or 11.5 per cent, showed the presence of a hernia. Two hundred and sixteen cases in which there was no drainage showed no evidence of a hernia. The remaining fifty cases were operated upon by means of a right rectus incision and eight hernias resulted, an incidence of 16 per cent. Sloan[7], in 1932, reported three hernias following 114 operations in which a longitudinal incision in the upper abdomen was used. This incision varied in that the peritoneum and posterior rectus sheath were incised horizontally. Frank[8] stated that twenty-one hernias followed 200 operations in which ventrofixation was performed, while in the remainder of the series there was only an incidence of 0.8 per cent as compared with 10.5 per cent for the former.

There have been 3142 cases admitted to the Peter Bent Brigham Hospital from 1913 to 1932 with the diagnosis of hernia, and of these, 300 cases were incisional hernias, an incidence of 9.5 per cent. This is comparable to the findings of Masson[9] who reports an incidence of 10.8 per cent, and to that of Cave[10] who reports a slightly lower incidence of 6.02 per cent.

TABLE I

Author		Number of Cases	Type of Incision	Number of Hernias	Incidence
Homans	1887	300+	Miscellaneous	30	10% (estimate)
Stanton	1916	500	Miscellaneous	24	4.8%
Moschcowitz	1916	67	Transverse in upper abdomen	0	0
Rouffort	1924	1506	Transverse in upper abdomen	50	.33%
Craig	1927	7672	Miscellaneous	79	1.3%
Garlock	1929	264	McBurney (drain)*	17	6.4%
		104	McBurney (drain)†	12	11.5%
		50	Right rectus	8	16.0%
		216	McBurney	0	0
Sloan	1932	114	Upper abdomen	3	2.6%
Frank	1932	200	Lower midline with ventrofixation	21	10.5%
		?	Lower midline	?	.8%

*No sutures used.
†Sutures in fascia or skin.

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The etiology of incisional hernia has been attributed to many causes. The most common ones are sepsis, an increase in intra-abdominal pressure (distention, cough and hiccough) following operation, improper closure of either the peritoneum or fascia, obesity or injury to the motor nerves causing a muscle paralysis. However, it does not seem possible to say that any one of these is the primary factor, but that two or more are associated to some extent in most cases.

In such a series there is often a period of many years intervening between the time of the original operation and the time the patient elects to have the hernia repaired. This makes it quite difficult to accurately determine what etiological factors were present originally. However, as a rule, the patient remembers whether the wound was drained or if infection occurred. The following chart gives the number of cases of the total series in which these factors were found.

TABLE II

TOTAL SERIES

Site of Hernia		Drainage with Infection	Infection Only	Obesity
Lower midline	137 (45.3%)	32	19	38
Upper right rectus	50 (16.6%)	32	5	11
Lower right rectus	49 (16.3%)	29	5	9
McBurney	44 (14.6%)	28	4	9
Miscellaneous	20 (6.6%)	3	8	6
	300	124 (41.3%)	41 (13.6%)	73 (24.3%)

The etiological factor must occur early following operation, for in this series 139 (46.3 per cent) patients reported the presence of a mass in the areas of the wound ninety days or less after the original operation. Twenty-nine (9.6 per cent) noticed the first sign of a hernia within six months. Forty-eight (16 per cent) reported that a hernia developed within the first year, while fifty-eight (19.3 per cent) patients did not have evidence of a hernia until a year or more had elapsed following operation. The remaining twenty-six (8.6 per cent) did not recall the exact time element between operation and the appearance of the hernia.

There were 215 females in this series as compared with eighty-five males. This is due to the apparent susceptibility of wounds in the lower midline to rupture and the frequency of this incision in females. One hundred and thirty-seven cases (45.3 per cent) were found to occur at the site of previous incisions in the lower midline, fifty (16.6 per cent) in the region of the upper right rectus, forty-nine (16.3 per cent) following a lower right rectus incision, forty-four (14.6 per cent) at McBurney's point following a muscle-splitting incision, and the remaining twenty (6.6 per cent) at various locations in the abdominal wall.

All types of operations had been performed through the various incisions. These various procedures did not seem to play any specific part in the production of a weakness of the abdominal wall with the exception of ventral fixation of the fundus or cervical stump. There were thirty-four hernias following such fixations and in only four of these was there an additional etiological factor. Moreover, in four of the cases in which there was a recurrence following repair, an incidental ventral fixation was performed. Frank[8] found twenty-one (10.5 per cent) incisional hernias to have developed in a series of 200 ventral fixations. He concluded that the occurrence of hernia after ventral fixation appears to be proportional to the amount of drag exerted by the uterus and that it exceeds immeasurably the number of hernias found in other laparotomies. This leads one to question the advisability of this operation.

In 100 of the 300 cases the original operation had been performed at this hospital. Therefore a critical analysis of this group at the time of their former admission was made in an attempt to bring out additional etiological factors. Each case was studied as to (1) the presence of obesity, (2) the type of closure, (3) an occurrence of increased intra-abdominal pressure following operation, (4) drainage or infection of the wound, and (5) the number of days in bed following operation. Forty-eight patients were definitely obese and at the time of operation it was necessary to traverse a thick panniculus. In thirteen of these cases there was no additional factor, while in the remaining thirty-five there were one or more reasons sufficient to explain the occurrence of the hernia.

The closure of abdominal wounds in this hospital has been performed in a routine manner with only a few exceptions. The peritoneum in all of these cases was sutured with continuous No. 1 chromic catgut. The fascia, in eighty-seven of these 100 cases, was sutured with interrupted No. 1 chromic, and in forty-three of these, this was supported by silkworm gut retention sutures. In eleven instances the fascia was closed with a continuous chromic suture which was strengthened by silkworm retention sutures. In the remaining two cases the fascia was closed with interrupted silk. The subcutaneous tissue in all instances was approximated by fine sutures and the skin closed with interrupted silk. These types of closure are generally recognized to be adequate and not prone to the production of weak abdominal wounds.

The increase in intra-abdominal pressure im-

mediately following operation may cause the breaking of sutures, their tearing through tissues or the protrusion of an abdominal tissue or viscus, omentum particularly, between sutures thus forming a potential weakness for the development of a hernia. The common causes of this increase in pressure are distention and cough. In forty-three individuals there was abdominal distention which persisted from twenty-four to forty-eight hours or more. In twenty-eight individuals there was a postoperative cough which was present for several days. Other causes of increased pressure such as vomiting and urinary retention were not significant in this series.

Infection and drainage of wounds were apparently important factors in the production of hernias in this group of cases. There were thirty-three cases in which the incision had been drained and later became infected. In fourteen cases there was no evidence of infection though the operative wound had been drained. In sixteen cases the wound showed evidence of infection extending down to, and in some cases, through the fascia. Thus, altogether there were forty-nine cases of infection. The infecting organism was the colon bacillus in the majority of these, streptococci and staphylococci being identified on only two occasions.

The above factors were found singly or combined in all but eight cases. While there is without a doubt an etiological reason for the formation of incisional hernia it could not be demonstrated in these. The shortness of the stay in bed following operation could not account for this, for the entire group remained in bed for an average of slightly more than fourteen days, the shortest convalescence being twelve days in bed.

The treatment of incisional hernia has been much the same. In a few, immediate operation was necessary because of a strangulated or incarcerated hernia. However in the vast majority there was no need for a surgical procedure at the moment of entry. It should be added that many of these patients who were obese were placed on diets that caused a loss of thirty to forty pounds before they were admitted to the house. On admission these patients were placed in bed for a period of a few days to a week. During this time they were given a low residue diet and a cathartic to lower intestinal distention. Furthermore this period permits the patient to become accustomed to the use of a bedpan and this, to a certain extent, prevents catheterization and the necessity of enemas postoperatively.

Of the 300 cases diagnosed as incisional hernia, 240 were submitted to operation. In nearly all of these the same type of repair was carried out. After reduction of the hernia each layer was carefully identified so that like structures could be approximated. The flaps of fascia were dissected out as far as possible on either side and then overlapped. The overlapping flap was anchored by means of interrupted mattress sutures, silk being used in twenty-seven cases and chromic catgut in 199 cases. Following the closure of the fascial layers the subcutaneous tissues were closed with fine silk to obliterate any dead space. The Gallie type of repair with fresh fascia lata was used in the remaining fourteen cases which presented large fascial defects at the time of operation, and prevented the approximation of the fascial layers. There were four deaths following operation, a mortality of 1.33 per cent. Two deaths immediately followed operation and were in cases in which there was strangulation of the hernia at the time of admission. The other two deaths were due to pulmonary complications.

There were forty recurrences, an incidence of 19.6 per cent, occurring after the repair in the 204 cases that were followed. Ten of these forty cases showed only a bulging of the wound with no evidence of a true hernia sac. There were thirty-seven cases in which the fascia had been overlapped, and three in which a Gallie repair with living fascia lata had been used. Twenty-two of these patients were obese. It is interesting to note that in spite of careful preoperative care, distention developed in sixteen of these forty cases. In seven there was an infection of the wound developing immediately after operation.

CONCLUSIONS

1. There are definite factors occurring at the time of operation, or shortly thereafter, which contribute to the occurrence of an incisional hernia.
2. Infection or drainage of the incision and an increase in intra-abdominal pressure were of the most frequent occurrence in this series.
3. Ventral fixation of the fundus or cervical stump is more prone to the formation of a hernia than other operative procedure.
4. Two hundred and forty incisional hernias were repaired in a series of 300. Two hundred and twenty-six were repaired by means of a standard method of overlapping the fascia. Fourteen were repaired by the Gallie method.
5. Two hundred and four cases were followed after a period of two or more years. There was a recurrence of forty cases (19.6 per cent). Three of the forty were Gallie repairs.

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THE FAILURE OF ROENTGEN-RAY THERAPY OF PITUITARY AND ADRENALS IN ESSENTIAL HYPERTENSION*

BY PERRY C. BAIRD, M.D.,† J. R. LINGLEY, M.D.,† AND ROBERT STERLING PALMER, M.D.†

IN view of the clinical characteristics of what may be termed Cushing's syndrome, namely pituitary basophilism accompanied by certain symptoms and signs including a severe form of hypertension, and because x-ray therapy may relieve this syndrome[1, 2, 3] it occurred to us that x-ray therapy might conceivably have some favorable effect in severe forms of essential hypertension though not conforming strictly to the characteristics of the Cushing syndrome of pituitary basophilism. Conservative x-ray therapy in eight patients with severe essential hypertension was started two years ago. The patients have been carefully followed since and no definite favorable effects have been noted in these advanced cases. Hutton[4] states that x-ray therapy of pituitary and adrenals causes a reduction in blood pressure with improvement in well-being but appends no data. It is to be recalled that hypertensive patients are very suggestible, that there are marked spontaneous variations both in the blood pressure and in the symptoms of patients with essential hypertension.

Our case reports are as follows:

CASE 1. E. G. B., aged thirty, white, housewife, first studied at the Massachusetts General Hospital, August 12, 1932. The patient was known to have had an abnormally high blood pressure for two years before entrance to the hospital and during that time complained of headaches, dyspnea, palpitation and tachycardia on exertion, orthopnea, slight afternoon edema of the ankles, nocturia and occasional blurring of vision. For a few months before entry the catamenia had been scant. The patient's mother died of shock at sixty-eight. One year before entry a therapeutic abortion had been performed because of albuminuria and high blood pressure.

Physical examination revealed disseminated cortical retinitis with marked impairment of vision, apparent enlargement of the heart to the left, a blood pressure of 210 systolic, 150 diastolic. With rest 180 systolic and 98 diastolic. Urine examination was negative except for a very slight trace of albumin. Concentration, intravenous phenolsulphonphthalein, and urea clearance tests were negative. Lumbar puncture was negative. Complement fixation tests for syphilis on blood and spinal fluid were negative.

Roentgen study of the heart indicated measurements within normal limits; the aorta was tortuous and prominent in the region of the knob. Roentgen study of the skull revealed no abnormality.

Diagnosis: Essential hypertension, malignant phase.

Bromides and phenobarbital were prescribed.

X-ray treatment 600 r. in two fields 5 x 5 cm. centered over the pituitary from either side was given in divided doses.

The patient was followed for seven months in the Out-Patient Department. The systolic blood pressure varied from 220 to 250 and the diastolic from 150 to 170.

Estrin was given by mouth; phenobarbital, bromides and chloral were used for symptomatic relief.

It was very evident that x-ray treatment of the pituitary had exerted no favorable influence in this case during the time of observation. The patient has not been heard from since.

CASE 2. K. I. B., aged fifty, white, divorced housewife, was observed for one and three-quarters years during all of which time she had a systolic blood pressure of 250 or over and diastolic pressure of 130 to 170. She developed both anginal and congestive failure and finally progressive renal failure dying in uremia May 21, 1934.

Diagnosis: Essential hypertension, hypertensive heart disease, anginal and congestive heart failure, uremia.

She received x-ray treatment both to the pituitary and adrenals as follows: 600 r. to adrenals 6/14/32, 600 r. to adrenals 1/31/34, 500 r. right and left pituitary on 2/17/34. No favorable effect was noted.

CASE 3. E. S. P., aged forty-three, white, housewife, was studied in the Massachusetts General Hospital from June 2 to June 15, 1932. A blood pressure of 200 systolic and 150 diastolic was observed in the Out-Patient Department three years before entry. Ten months before entry a cerebral accident occurred giving a left hemiparesis. Physical examination showed arteriolar sclerosis in the fundi, enlarged heart which was confirmed by x-ray which also showed in addition tortuosity and calcification of the aorta. Complete renal studies indicated no impairment.

Diagnosis: Essential hypertension, hypertensive heart disease, left hemiparesis.

X-ray treatment was given as follows: 600 r. 20x20 cm. held over adrenals in three doses. No effect was noted after one month. The patient died April 28, 1933 of cerebral hemorrhage.

CASE 4. F. C., aged thirty-three, white, single, unemployed female, first entered the Massachusetts General Hospital April 3, 1931, with a subarach-

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noid hemorrhage. She entered a second time for study in June, 1932, and was followed thereafter in the Out-Patient Department. The history included two fleeting episodes, one of blindness, and one of unconsciousness, and a second subarachnoid hemorrhage treated at another hospital. The blood pressure varied from 170 to 260 systolic and from 130 to 160 diastolic. The heart was enlarged. The fundi showed arteriolar change.

Diagnosis: Essential hypertension, malignant phase, hypertensive heart disease. Subarachnoid hemorrhage. Hypertensive encephalopathy.

The patient had x-ray therapy to both pituitary and adrenals as follows: 700 r. to right and left pituitary 3/22/32, 525 r. to right and left pituitary 4/25/32, 600 r. to adrenals 6/9/32, 400 r. to adrenals 2/7/34. Apparent relief of headaches followed radiation of the pituitary, no effect was observed from radiating the adrenals. The patient died, cause not ascertained, three months after the last x-ray treatment.

CASE 5. G. C., aged forty-five, white, single, unemployed female, is known to have had an abnormally high blood pressure for 15 years, has been observed in the House and Out-Patient Departments of the Massachusetts General Hospital from May, 1930 to May 21, 1934. The blood pressure has varied between 170 and 250 systolic, 115 and 150 diastolic. The fundi show moderate arteriolar change, the heart is not enlarged though the symptoms indicate loss of reserve. The kidneys do not show any marked change.

Diagnosis: Essential Hypertension.

X-ray treatment has been as follows: 700 r. right and left pituitary 2/24/32. No evidence of any favorable effect has been observed.

CASE 6. A. C. D., aged thirty-nine, white, housewife, was admitted to the hospital Dec. 28, 1932, because of increasing drowsiness. The patient was said to have had a high blood pressure for twelve years. The drowsiness deepened at first without definite neurological changes, but gradually cleared. The spinal fluid was drained twice, venesection was performed. The blood pressure varied between 200 and 240 systolic, 120 and 140 diastolic. The heart was enlarged. The fundi showed arteriolar sclerosis. The discs were edematous.

Diagnosis: Essential hypertension, malignant phase, hypertensive heart disease, hypertensive encephalopathy.

The patient was digitalized. Six months later, May 19, 1933, x-ray treatment of the pituitary was given as follows: 600 r. right and left pituitary 6/6/33. No favorable effect was noted. The patient died five months later, cause not determined.

CASE 7. J. P., aged thirty-eight, white, single, unemployed male, entered the Massachusetts General Hospital Jan. 28, 1932, after three weeks of vertigo and failing vision. The fundi showed hemorrhages, exudate and edematous discs. The blood pressure averaged 240 systolic and 140 diastolic. The heart was large, the urine showed definite changes and the renal function was impaired but there was no renal failure.

Diagnosis: Essential hypertension; malignant phase; hypertensive heart disease; arteriosclerotic nephritis (? malignant nephrosclerosis).

The patient received 600 r. 2/23/32 following which the blood pressure was 180 systolic, 120 diastolic. Headache continued, vision became worse and subsequently the blood pressure was again up, 300 systolic and 220 diastolic on repeated readings. The patient again entered the hospital and on March 26, 1932 received 600 r. over the pituitary. A few days later he was discharged unimproved. The patient died some time subsequent to this, the exact time and cause of death are unknown.

CASE 8. S. H., aged forty-eight, white, factory worker, entered the Massachusetts General Hospital Oct. 22, 1930, because of blindness in the right eye for three weeks and known high blood pressure of two years' duration. The fundi showed marked tortuosity and arteriolar sclerosis with marked arteriovenous nicking, scattered hemorrhages and exudate. The blood pressure was 210 to 160 systolic and 90 to 120 diastolic. Urine examination showed a trace to a very slight trace of albumin, a few hyaline and granular casts. Concentration was unimpaired. There was no nitrogen retention. X-ray of the heart showed no enlargement but marked tortuosity of the aorta. The patient has been followed since in the Out-Patient Department, treated symptomatically. He also has a definite allergic condition, hay fever.

Diagnosis: Essential hypertension, ? malignant phase.

X-ray treatment was as follows: 750 r. right and left temporal regions to the pituitary 1/24/32 and 600 r. posteriorly to region of adrenals 2/15/34. No definite change in the blood pressure has followed either treatment, nevertheless the patient has remained the same rather than having grown worse as expected.

The technical factors employed in the irradiation were as follows: 200 KVP 6 Ma. 50 cm. distance; valve-tube rectification, 0.5 mm. copper and 4 mm. celluloid filtration. Treatment consisted of 600 r. to the posterior adrenal area in two doses of 300 r. The pituitary was treated by two fields, one from each side of the skull, 600 r. being given through each field in two doses of 300 r. The dosage was then kept below that which ordinarily produces permanent damage to the skin. In this type of patient the prognosis on whom is poor, larger dosage than we have given is probably justifiable.

CONCLUSION

Eight patients with severe essential hypertension in the late stages of the disease have been treated by roentgen radiation over pituitary or adrenals or both. In the dosage used, no strikingly favorable effect on blood pressure or symptoms has been noted.

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VITAL FUNCTION STUDIES: XII. ANALYSIS OF A GROUP OF CHILDREN WITH IMPAIRED HEARING*

BY ALLAN WINTER ROWE, Ph.D.†

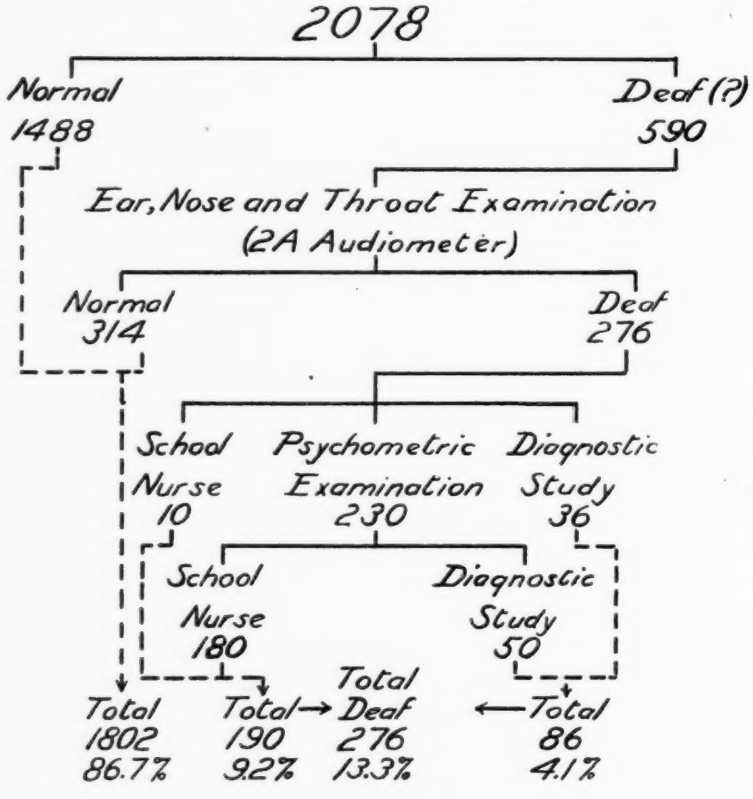
IN a previous communication Rowe and Drury[1] have summarized the results of a community child study based initially on the analysis of the individual aural acuity. Papers reporting (a) the details of the initial study with the 4-A audiometer, (b) the individual examination of all those with apparent impairment, as indicated by the first test, and (c) the individual psychometric study of the group proved by the second study actually to be hard of hearing, are in preparation. This communication deals specifically with the small group in whom hardness of hearing was demonstrated, in some cases complicated by mental retardation or inferiority and in which no direct etiological factor was immediately forthcoming. This small group was studied intensively and the results form the body of the present paper.

The general course of the investigation with the numerical partition of the several sub-groups can be shown most compactly in tabular form.

The initial study, like all other methods involving group approach, absorbs a number of sources of error that the test method is incompetent to eliminate. In this category fall lack of concentration, incoöperation, mental slowness, and even a misguided sense of humor. On the other hand, those successfully passing the test can be regarded as having both normal hearing and a reasonable degree of mental and social development. The second phase of the study, based upon individual examination, showed that only forty-seven per cent of the first positive group had demonstrably lowered hearing acuity. By the further resolution of the psychometric approach, the true hard of hearing group was

Table I

Scheme of Study



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divided into two unequal fractions. The larger moiety had normal intelligence but the medical examination had reported remediable physical defects (tonsils, teeth, discharging ears, and the like) calling for the attention of the school nurses and physicians. The remaining number, eighty-six in all, were deaf to some degree, and in addition, thirty-six had physical stigmata indicating the need of more extended study, while the remaining fifty had potentially a sub-normal mentality which equally invited additional observation.

Clinics were arranged for the diagnostic examination of the total group but through a variety of causes only about half of them came to final study. The others, in the main, had left school and were at work or had moved away with consequent loss of contact. In a few cases the parents objected to the study of their offspring on the ground that the latter were entirely normal and the examination uncalled for. This is an inhibiting factor that is encountered inevitably in any medical approach to such a group. The demonstrated physical or mental inferiority of the child is seemingly assumed by the parent to be a personal reflection which must be combated by a truculent denial of the existing condition. Education of parents along social lines is a very real need to-day. The actual conditions in the unstudied fraction of the group are assembled in table II.

TABLE II

ANALYSIS OF CASES NOT FINALLY EXAMINED

Condition	Number	
Mental retardation, established (I. Q. less than 0.71)	12	(Average 0.67)
Mental retardation, probable (I. Q. between 0.71 and 0.79)	17	(Average 0.74)
Congenital lues, probable	3	
Dwarf	1	
Unclassified	9	
Total, all hard of hearing	42	

Of the several groups above, only that marked unclassified calls for passing comment. These nine children, in addition to the hearing defect, all exhibited departures from the normal, no one of which, however, was of such a character as to warrant a specific etiological classification.

Of the remaining forty-four children, in the group, all had some additional study and in the majority of cases enough to establish a diagnosis. The etiological backgrounds of this group, discussion of which constitutes the body of this paper, are given in the next table.

The proportion of endocrine to non-endocrine is practically one to two. Of all of the groups, that of the children with demonstrated lesions of the central nervous system assumes a dominant proportion. Patients with history of birth or later head trauma, postencephalitic and meningeal cases, and children with hydrocephalus made up the group.

Before entering on the detailed discussion of the group, the warrant for the diagnostic classification should be made plain. The general method of approach has already been fully described[2]. It may suffice here to say that each child had a very thorough physical examination and a complete medical history was secured which was supplemented, where possible, by a social report. In addition, a series of laboratory measurements and special observations were conducted, the two groups of evidence constituting the basis of the diagnostic interpretation. In every case a large series of additional tests were available; the six patients reported as unclassified are so designated as they failed to complete the study as outlined. The routine program was as follows:

TABLE III

ETIOLOGY

Diagnosis	Number	
Endocrine		
Pituitary	7	
Thyroid	5	
Unclassified (incomplete)	2	
		14
Non-Endocrine		
Lesions of central nervous system	17	
Severe focal infections	6	
Psychosis, incipient	1	
Renal pathology	1	
Congenital syphilis	1	
Unclassified (incomplete)	4	
		30
Total		44

TABLE IV

Medical history	24-hour urine collection
Physical examination	Nitrogen partition
Ear, nose and throat examination	Blood chemistry
	Blood morphology
Special eye examination*	Blood serology
Psychometric examination	Phenolsulphonephthalein
Audiogram	Alveolar carbon dioxide
	Basal metabolism
	Biometry
	Galactose tolerance*

*Routine only at Worcester Clinic.

Additional special examinations were carried out as the need for them in the individual case was demonstrated by the results of the routine program.

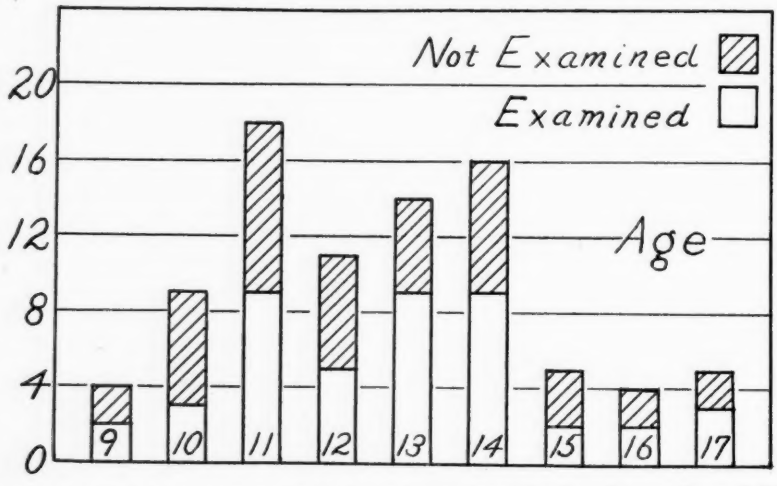
As an indirect measure of the community interest and a datum of potential social value, the following may be recorded.

Eighteen schools participated in the study and one or more children from each were referred

for the final examinations. Two schools sent all of the designated children scoring 100 per cent coöperation; three sent none of the children with a record of 0 per cent. The remaining thirteen showed a scatter between twenty-five per cent and seventy-five per cent. Recognizing that many divergent factors played a part in determining these figures, none the less they speak strongly for an appreciable degree of indifference and lack of apprehension in communities presumably of average intelligence and education. We may now turn to the actual details derived from the diagnostic studies.

Sex and Age. Twenty-three of the group were boys, and twenty-one girls. The average age in both groups was thirteen years. That this moiety of the total group referred for study is representative as regards these basic data is attested by the fact that in the fraction not studied there were twenty-three boys and nineteen girls, the average age being respectively thirteen and twelve years.

Six of the girls in the study group had matured, and all but one gave uneventful menstrual histories. The exception reported prolonged irregular rhythm and copious periods. She was one of the two endocrine cases that lacked final classification through the incomplete character of the study. Her I. Q. was 109. The age scatter is shown in the accompanying graph.



Nearly three-quarters of the group fall between the ages of eleven and fourteen years, the centre of the period of physiological readjustment. This is probably not entirely fortuitous as the group derived from one twenty-five times as large, and with a much more uniform age distribution.

Family History. The general report was on a parity with the usual community statistics. An exception might be noted in the case of diabetes, one in six of the patients recording the disease in one or more near relatives. Joslin's figures[3], based upon familial diabetes in over five thousand diabetics, is about twenty-three per cent, John's[4] for a series of one thousand, only ten per cent. The figure for this non-diabetic group of children is certainly high.

Chief Complaint. This is always a datum of much interest albeit one of the most subjective evidences collected in a diagnostic study. In the present instance it is peculiarly important as all of these children had a demonstrated loss of hearing of significant proportions and the majority exhibited, in addition, other concrete departures from the normal of an inhibiting character.

TABLE V

CHIEF COMPLAINT

Deafness	16	
Earache	6	
		22
Backward in school	5	
No complaint	17	
		22

In other words, only fifty per cent complained of the ears and but a fraction of these of deafness. Of the five reporting backwardness, one had I. Q. of 0.69, two the borderline levels of 0.78 and 0.79, one was normal with 0.88, and one not examined. The striking feature lies in the seventeen who presented no complaint. Six of these had I. Q. of less than 0.75 (one was 0.62), three more, not examined psychometrically, were obviously of retarded mentality, four had traumatic lesions of the central nervous system, three clear-cut thyroid deficiencies, and one a pituitary dysfunction. If of no other significance, these figures emphasize the subjective character of this type of evidence (i.e., reports in history) and the need of its control through more objective agencies.

Past History. Many of the reports of the patients' past history are irrelevant to the present consideration. Selecting those of a poten-

tial importance, they are collected in table VI.

Slightly over one-third of the entire group gave a history directly or putatively involving the central nervous system. Several of the children had had jaundice, the incidence of the common infections was high, and two-thirds had had at least one tonsillectomy. The ear history, as could be inferred from the records of the chief complaint, probably fell materially short of the facts. As it was, twenty-two recorded deafness, past or present, eleven reported discharging ears, and twelve complained of tinnitus, a modest record in view of the tangible ear pathology.

TABLE VI

PAST HISTORY

Prematurity	2	37%
Instrumental delivery	4	
Convulsions	2	
Encephalitis lethargica	2	
Severe head trauma	7	
Nervous instability +	13	
Gastro-intestinal disorders	8	
Nocturnal enuresis	14	
Congenital syphilis	1	
Infections, Measles	35	
Mumps	28	
Pertussis	33	
Scarlet fever	9	
Tonsillectomy	29	

Physical Examination. In a number of the above records, the observations at the time of physical examinations serve as a check and control. Again, only the more significant features will be reported.

TABLE VII

PHYSICAL EXAMINATION

Datum		Number
Development below normal		29
Genitalia, underdeveloped		3
overdeveloped		4
Adenopathy, cervical	26	
axillary	2	
inguinal	4	
		32
Nasal, obstruction	14	
discharge	10	
		24
Infected tonsils		26
Hypertrophic pharyngitis		27
Rachitic residua		5
Spinal defects		5
Cardiac murmurs		14
Pathological appendix		2

Over half of the group showed developmental abnormality; significant adenopathy was the common report and half had nasal obstruction or discharge. Although twenty-nine in forty-six had had tonsillectomies, twenty-six showed infection either in the glands or in the remnants left after operation. The other features scarcely require comment. As a group, the children were in poor condition, with general report of past poor development and current focal infection.

Personality Factors. These fail of exact definition through lack of clear-cut standards. Exactly half of them were noted by the examiner to be stubborn, incoöperative, and unduly irritable. In my own experience, I should ascribe not a few of these reports to parental example and influence. The theme is not a happy one; it requires no elaboration.

Physical Data. A few simple biometric magnitudes present a composite of the group.

TABLE VIII

PHYSICAL DATA (AVERAGES)

Datum	Boys	Girls	Average
Height (cm.)	152.8	154.0	153.4
Trunk (cm.)	77.5	79.2	78.3
Sitting height index	0.51	0.51	0.51
Area	1.37	1.37	1.37
Weight (kg.)	43.3	43.3	43.3
Lung volume (cc.)	2810	2520	2680

The agreements between the two subdivisions based on sex are fortuitous. The girls are slightly taller, reversing the usual order. On the other hand, both averages are definitely superior to Breitmann's[5] average figures for his "tall type" (♂ = 145 cm., ♀ = 143.5 cm.). Racial strain may play some part in this discrepancy; the advantage here lies with a group which has been recorded as poorly developed. The sitting height values are the low normal, characteristic of children; other values are not remarkable. Relative departures from recognized standards frequently show a clarity of outline that is lacking in the absolute values from which they are drawn. Two such comparisons are given in the next table; Dreyer's[6] predictions from sitting height and the mean of West's[7] two criteria.

The boys are slightly above, the girls below prediction, figures which are mutually compensatory in striking the grand average. In regard to the lung volumes, the boys make a slightly better showing than the girls, which may be apparent rather than real because of the convention of the standards adopted. Experience with many hundreds of children shows that the Dreyer "B" Female standard comes closer to the boy performance than even the low Male "C" prediction. In adult years, however, the most exacting of the Dreyer predictions, the Male "A" standard, is most nearly in accord with the performance of the average man. An explanation of this anomaly is not forthcoming.

Urine Data. Certain of the facts derived from the chemical and microscopical study of the 24-hour urine output are either directly significant

or give valuable criteria for the interpretation of other data.

The general elimination is good and the average figures normal. There is a definite incidence of albuminuria, the amounts being, however, the smallest detectable traces. Only one-third as many show casts although one child had a history of a previous acute, severe nephritis while

TABLE IX

PHYSICAL COMPARISONS

Datum	Boys	Girls	Total or Average
Weight			
High	+22	+44	—
Low	—23	—22	—
Number above prediction	13	5	18
Average amount	+13%	+15%	+13%
Number below prediction	10	16	26
Average amount	—7%	—14%	—11%
Grand average	+4%	—6%	—1%
Lung Volume			
High	+14	+16	—
Low	—21	—22	—
Number above prediction	12	4	16
Average amount	+6%*	+8%	+7%
Number below prediction	11	17	28
Average amount	—9%*	—13%	—11%
Grand average	—1%*	—9%	—5%

*Boys below 15, use both Dreyer's and West's Female Standards.

several others reported an earlier unclassified renal pathology. Poor posture was probably responsible for an appreciable portion of the albuminurics (orthostatic).

One in four had glycosuria, a point that will be discussed in connection with the sugar tolerance. The average nitrogen output indicated that an entirely adequate amount of protein

TABLE X

URINE DATA

Datum	Total or Average
Volume (c.c.)	900
Specific gravity	1.021
Total solids (Haeser) (Gm.)	44
Albumin	28%
Casts (chiefly hyaline)	9%
Sugar	25%
Total nitrogen (Gm.)	8.09
Residual nitrogen (av.)	9.7%
% above 9%	43

was being catabolized by the average child. Actually only five in the group fell below the roughly estimated maintenance level. The residual nitrogen fraction, a general index of metabolic normality, was high, and nearly half of the group were above permissible levels. The frequent finding of severe focal infective process, together with the group of endocrine cases, accounted for practically the entire group.

Blood Chemistry. As an index of the level of kidney permeability, the blood constituents are highly significant. Blood sugar levels also convey specific information.

TABLE XI

BLOOD CHEMISTRY

Datum	Total or Average
Non-protein nitrogen (mgm.)	27
Urea nitrogen (mgm.)	13
Urea nitrogen %	48%
Uric acid (mgm.)	3.0
Creatinin	1.4
Residual nitrogen	12.4
Sugar	96

The average values throughout are entirely normal. Examination of the individual reports shows four with definitely high blood uric acid and perhaps ten more with whom this substance shows an upward tendency. The pituitary group and the children with earlier jaundice account for practically all of these. Only a few of the blood sugar levels show a downward tendency, and none of these fall below the conventional normal limit of 80 mgm. High blood sugars were entirely absent in spite of the possible emotional factor that may vitiate this datum.

Blood Morphology. This, too, constitutes an objective record of potential significance.

TABLE XII

BLOOD MORPHOLOGY

Datum	Total or Average
Hemoglobin (%)	84
Below 85%	77%
Erythrocytes	5,110,000
Below 4,500,000	18%
Color index	0.82
Leucocytes	8,120
Above 10,000	16%
Lymphocytes (%)	32
Eosinophiles (%)	3
Above 3%	34%

There is a well-defined tendency here to somewhat low hemoglobin values with nearly four-fifths of the entire series inferior to the conventional low boundary. The anemic tendency defined a secondary type. A few showed a slight leucocytosis of moderate proportions, undoubtedly reflecting the incidence of focal infections. The eosinophile count was relatively high, and one-third exceeded the modest normal boundary. The pituitary cases, one or two allergic patients, and a few of those with extensive skin eruptions were the main contributors.

Respiratory Metabolism. Using the mean of

the Harris-Benedict[8] and Aub-DuBois[9] prediction values, the oxygen requirements of the individuals were carefully determined. Recognizing the intrinsic difficulty of securing a basal condition particularly with children, the values observed are to be regarded as maxima and the true levels possibly significantly below those recorded.

TABLE XIII

RESPIRATORY METABOLISM

Datum	Total or Average
Basal Rate:	
High*	+11%
Low	—23%
Number above prediction*	10
Average amount*	+5%
Number below prediction	31
Average amount	—10%
% below—10%	42%
Blood pressure, systolic	112
Diastolic	63
Pulse	74
Respiration	15
Temperature	98.6°
Alveolar CO_2	39

*Three measurements have been discarded; these were reported as not basal at time of testing. The highest was plus nineteen per cent, the patient was normal or even below prediction, as shown by repetition.

On this warrantable basis, the low levels reported assume an added significance. Actually thirteen of the children had basal rates at a frankly hypofunctional level, and an additional number indicated a downward trend. The endocrine cases and the few with partial protein inanition accounted for all of the low readings. The concomitant physical findings show fairly normal averages. Departures from the normal shown by the individual case, and in some degree diagnostic of their specific condition, are absorbed by this form of collective presentation. For example, all of the thyroid cases showed low, and the pituitary depressed pulse rates, which are balanced by a group with neural damage whose rates were somewhat high. The limit of variation of the temperatures was narrow, only three exceeding 99° (99.6° the highest) and none falling below 98°.

The alveolar carbon dioxide average, while within normal limits, is somewhat low. I ascribe this primarily to the difficulty of collecting a representative sample from some of the younger children. None of the levels recorded were within the acidotic range.

Carbohydrate Metabolism. Measurements of this aspect were not secured on all of the group. The galactose test[10]—the most satisfactory measure—requires three days for its performance and this is an inhibiting condition particularly in dealing with a non-hospitalized group. Touching on this test, the normal standards may be briefly reviewed. Males of any age, normally should show by delicate qualitative test a trace of the sugar in the urine after a test meal of 30 grams and a negative response to one of 20. The immature girls are normally positive with 20 grams, show a rising assimilation limit during the first year of menstruation, and at some time within that period establish themselves at 40 grams, which is the normal adult level up to the climacteric.

Of the children not tested, four had a slight glycosuria, indicating some non-diabetic disturbance of the carbohydrate metabolism, as all of the blood sugar levels were normal (99, 94, 87, 83 mgm.). Twenty-two were tested with galactose (seven of whom also showed a glycosuria), ten showing normal response while twelve had depressed assimilation limits, the average amount being minus forty-four per cent. Tests could not be secured on the remaining eighteen. In other words, where information was available, sixteen in twenty-six children, or sixty-two per cent, showed abnormalities of the carbohydrate metabolism with a lowering of the assimilation limit. The pituitary and neural cases would account for the great majority of these.

Mental Capacity. The records here are not complete as certain of the children were referred direct for study and so did not receive the psychometric examination. Examination of the school records and personal contact of the otologist with the individual children gave no suggestion of any mental retardation and tentatively they may be regarded as normal.

TABLE XIV

PSYCHOMETRIC REPORT

	I. Q. below 0.71 Retarded	I. Q. 0.71-0.79 Doubtful	I. Q. over 80 Normal	Not Examined
Endocrine	1	3	2	8
Neural	3	5	2	7
Other non-endocrine	2	8	2	1
Totals	6	16	6	16

Recognizing the arbitrary character of the classification and the element of uncertainty both in the "doubtful" and in the "unexamined" groups, the tentative classification is suggestive. We find an equal division between those of possible mental inferiority and those of probable normal mentality. Six of the children may legitimately be considered to be retarded, and an equal number demonstrated as normal. All of these children were in the regular classes of the public schools of the communities involved. The bearing of these figures

on the economic and educational aspects of the study is apparent.

Eye Examination. This was a somewhat elaborate procedure conducted by Dr. R. H. Hopkins of the Evans Staff. The examination embraces the determination of the visual acuity, pupillary measurements, ophthalmoscopic study, and the delineation of the form and color fields and the blind spots. Conventional procedures have been outlined to eliminate factors of error such as fatigue. Retesting is practiced wherever the examiner feels that check determinations are advisable.

TABLE XV

EYE FINDINGS

Normal	25%
Pupillary pathology	39%
Abnormal discs	50%
Convergence insufficiency	25%
Blind spots enlarged	13%
Miscellaneous	13%

Only one-fourth of the group had entirely normal eyes. On the other hand, none of the children showed marked loss of acuity or significantly altered fields. Irregularity or inequality of the pupils, together with sluggish pupillary reactions, were shown by two-fifths. Half of the group had discs with hazy margins or a yellow color[11], and one-fourth showed convergence insufficiency. Taken together the group showed an amount of eye pathology which but emphasizes the many-sided response of this delicate mechanism to a wide variety of causes.

Ear Examination. As this phase of the study has already been considered in elaborate detail, it will suffice to summarize the results with this group. The results are given in the table.

TABLE XVI

EAR FINDINGS (AUDIOMETER)

Loss of Hearing	Right	Left	Both
Slight	0	0	6
Moderate	17	20	2
Severe	4	2	5

Unilateral loss 19
Bilateral loss 25

Six of the children showed a slight bilateral loss of acuity. All of the remainder had moderate or severe losses in one or both ears. Thirteen showed an equality in the bilateral loss, and with twelve, one ear was more seriously affected than the other. Less than half the group exhibited an unilateral impairment.

DISCUSSION

In view of the running commentary on the detailed analysis, there remains but little to add. Perhaps the most striking feature of this phase of the study is the combination of definite pathology and extensive evidence of significant metabolic disorder, with the limited report of disability as recorded under the chief complaint. Another, and potentially more important finding is the sharpness of definition from the aural acuity of the general bodily condition. The basis of primary selection of each of these children was a demonstrated loss of hearing power coupled in many instances with an absence of demonstrable cause for the condition. Every one of the group disclosed definite and significant departures from physical normality, which in a very certain proportion were susceptible of correction. In their school relations many of them present an economic problem and burden; to this in later years may well be added social factors of import. The expense of initial testing is relatively slight, many communities in Massachusetts and elsewhere have already undertaken it. Significant per capita cost attaches only to the children thoroughly studied, and this is a carefully selected group and but a small fraction, less than five per cent in the present instance, of the whole community. The force of the several etiological factors disclosed has already been touched upon. The high incidence of head injury in this group cannot be regarded as fortuitous. Taken broadly, a community study, of which this paper presents but a single phase, should be of real benefit not only to the individual but to the group of which the child is the unit. Defects are apprehended and defined; where remediable or capable of palliation, suitable steps for treatment are thus indicated.

SUMMARY

Eighty-six children have been selectively chosen from a group of over two thousand, on the basis of a loss of aural acuity without immediate demonstrable physical cause. Thorough study of one-half of this group—the remainder being unavailable—has demonstrated tangible pathology in every case. Injury to the central nervous system from trauma or disease forms the largest single group, with endocrine disorders involving either pituitary or thyroid a close second. The details of the clinical and laboratory examinations are reported and discussed.

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DISCUSSION

MARVIN H. JONES, M.D., New York City: The association of defective special senses with mental and physical abnormalities has been recognized. Dr. Rowe's tabulation of facts based on statistics helps to prove the relationship.

Our own research for the American Otological Society has placed us in active contact with one phase of this work, i.e., birth injuries. Our pathologist, Dr. Hemsath, has reported a high percentage of fatalities resulting from birth injury in proportion to total infant death rate. He procured and examined the temporal bones. Blood or exudate in the cochlea was found in some cases and these findings will be reported in detail at some future date.

Crowe and Guild made an original observation in adult patients. The temporal bones of patients who had had craniotomy operations showed blood or exudate in the cochlea and its aqueduct.

We have one specimen obtained from a patient with a history of head injury showing exudate in the cochlea and an atrophy of Corti's organ. It seems significant, considering these findings, that our clinical observations note deafness following trauma of the head. Patients without demonstrable fracture of the skull may have a resultant loss of hearing which is observed some time after the accident.

Recent research has been directed toward endocrine dysfunction as a possible cause of deafness. Bailey considers the manifestation of thyroid dysfunction as the effect of toxemia. This toxemia produces a low normal reaction affecting incidentally the special senses. Patients having a low normal basal metabolic rate have improved generally on small doses of thyroid. The hearing probably improves due to the increased alertness of the patient. Children show a more pronounced reaction than adults.

It must be remembered that the basal metabolism test is not a technically accurate procedure. Conclusions are not the result of tests done by instruments of precision, but rather the interpretation by the examiner.

Mental retardation with associated deafness may be grouped in three divisions.

1—Apparent mental deficiency due to traumatic or pathological deafness.

2—Mental deficiency due to deafness associated with disordered metabolism.

3—Mental deficiency and deafness produced by developmental or degenerative changes in the central nervous system.

As otologists we have occasion to differentiate these groups in order to intelligently advise treatment.

Obviously, the first two groups are the ones in our domain. Their mental mechanism is sound. Their mental development has been retarded because of sensory defects.

Education is the important phase of treatment, not the education of the child but of the doctor, the parents and last, but by no means least, the teacher.

To elucidate this point, the common reaction of the human being, when faced with a problem, is a retreat, rather than an attack. These children are problems. When parents, teachers and doctors are faced with these difficult problems, their defense mechanism reacts to force the process of adjustment on the child. The child in turn reacts in its own defense and exhibits an unwillingness to accept the burden added to his sensory handicaps. He adopts a defense within himself by withdrawing from distasteful situations. An attempt to crash through this barrier results in an antagonism on the part of the child, which is interpreted by the adult as non-coöperation. Some of these defense devices are assumed stupidity, exaggerated deafness, aggressive attitudes, misguided humor, indifference or a general cantankerous deportment. Adults dread the study of children in their care, as they are often faced with a reflection of their own faults. These children are not bad; they are avoiding unpleasant contacts. If contacts are forced, they exhibit the reaction of a normal adult, when ejected from the retreat of his afternoon nap.

Adults demand of children standard performances. Children having sensory handicaps try to compensate for their impediments, in order to produce normal responses. Sometimes, they have sufficient mental capacity to compensate perfectly and produce the picture of a normal. Normal response is only possible in a patient of higher than average mentality. More often they fail in complete compensation, and are classed as mentally subnormal. The deaf child endeavors to compensate by lip reading and a development of hyperacuity in his normal senses, such as vision and touch.

By what approach may we enhance development in our handicapped patients? The willingness to spend time is essential. Gain their confidence by approaching them through their own normal channels. As an example, we have a child who is considered deaf and mentally retarded. The speech is lacking because he has never been able to hear. Communication is difficult. Subjects which depend upon hearing and speech for communication are therefore not comprehended. In testing this child, use only methods which may be transmitted by the use of his normal senses. Frequently, these patients will show a hyperactive mentality. The mental perception may thus be proved normal and only the transmission at fault. A little encouragement results in enthusiasm on the part of the patient. He may be found friendly, coöperative, studious, and will develop into a useful citizen.

HORACE NEWHART, M.D., Minneapolis, Minn.: Dr. Rowe has held up to us an ideal piece of research, some features of which should ultimately be incorporated in every school health program.

At the present time the majority of us must confine our efforts to the more elementary task of educating the public to the importance of giving better care to the hearing apparatus. We need to create a larger demand for the periodic audiometric testing of all school children. As a by-product of these tests, carefully carried out and tabulated, much will be learned regarding the school child's health and educational needs.

After seven years of experience in the schools of the City of Minneapolis, the Hygiene Department is now providing for the testing of practically all school children at least once in two years, but the majority annually. During the current year 19,508 were tested individually with the 3-A audiometer and 20,197 in groups of forty with the 4-A instrument. We already note a gradually lessened incidence of hearing loss which may be ascribed to the greater concern regarding conditions causing defective hearing and to the prompt application of corrective measures made possible through earlier discovery of the defect.

I should like to ask Dr. Rowe if his studies have shown any definite relation between retardation and

the incidence of hearing loss. Several years ago we attempted to get some light on this question by surveying pupils of the summer school in the expectation that this group would contain a high per cent of retarded pupils trying to make up work in which they had failed. To our surprise we found that the entire group showed a less frequent incidence of hearing loss than the average pupils of the same age in regular classes. This was doubtless due partially to the seasonal factor, acute colds being less frequent among the summer school pupils and the general health level being high. The summer school group included many exceptionally bright children who were working for advanced credits and these more than neutralized the effect of those who were retarded because of defective hearing.

I wish to congratulate Dr. Rowe on his fine achievement in carrying out this investigation, the results of which must inspire further effort. I hope his contribution as soon as published may be placed in the hands of every physician in our country.

MR. H. W. MCMANAWAY, Staunton, Virginia: I came to listen rather than to take part in the discussion. An educator of the deaf, I hoped to learn much of value from this meeting. I cannot add anything from the medical standpoint, but I have been greatly interested by what has been presented this afternoon. There is one thing of practical value to you which I can say,—that is in reference to intelligence tests on children with hearing loss. Dr. Jones referred to difficulties which arose from hearing tests through defective speech. One very important thing which he did not mention, and which I have been impressed with, is the difficulty of getting intelligence tests on children with profound loss of hearing. In children, seriously deaf from infancy or early childhood, you have not only a lack of the knowledge of speech, but there is also a defect in the language ability of the child. The language defect is even more serious than the speech defect. The child does not understand either written or spoken language. Such children are often considered mentally defective because they cannot pass intelligence tests which for them are language tests, rather than tests of intelligence. This is not usually realized by the layman. May I then use a word of caution here and ask you to be careful not to class the child as mentally defective unless the test is other than a language test? A form board or other performance test should be used in testing children deaf from infancy, rather than any test involving the use of language. In administering the test be absolutely sure the child understands what is expected of him. Again, the young child's language deficiency may prevent his understanding what he is expected to do; obviously, his failure would be due to his language handicap rather than mental incapacity.

EDMUND P. FOWLER, M.D., New York City: Eight years ago we started our work with the audiometer. Dr. Fletcher's staff helped me in the tests, and I did otological examinations on several thousand school children. It gives me some satisfaction to see how the ball, started then, is rolling. As yet, in New York, we have no appropriation from the City for this work. Work is done by the League under great difficulties. Over a million children should be tested but, from a monetary standpoint, there is no support in sight for this work. I feel that Mr. McManaway's point is important. In many tests the child cannot respond because it has not heard sufficient language to understand the words. There is always a group of children who ought to be held over for further examination. They are not necessarily mentally deficient. A large number of children are merely deficient in attention. That is a psychic factor. In regard to medico-legal cases, otologists often have to testify as to hearing loss after concussion or bleeding from the ear. Dr. Rowe's remarks make me think that perhaps we do not always give the plaintiff a fair deal. It has not been held, heretofore, that an accident in one ear can affect the other ear, but I think it is true that hemorrhage involving the lymph spaces in one ear may reach the other ear through the various cerebral lymph channels. This is of course true of cerebrospinal fluid which itself may carry blood to most parts of the brain. These cases make it imperative that we should revamp our attitude as to the circulation inside of the skull.

EMIL AMBERG, M.D., Detroit, Mich.: I do not know that I can add anything to such a complete address. There are five main points, in my opinion, educational, economical, medical, eugenical and social. I think Dr. Rowe has covered his points very well. In regard to the economic aspect of the question, I think that every state and community should give more consideration to the high cost of repeaters. In Massachusetts investigations were made in that respect. The constitutional pathology of ear diseases, as I have stated repeatedly, is covered in the book of Bauer and Stein. One point I should like to quote concerning the stigmata of degeneration. In themselves alone they are not very important, only in connection with the whole picture. Among those, a high palate has been seen by me in many instances in the Detroit Day School for the Deaf. My investigations in this respect are entitled only to a rather comparative priority, because Hippocrates some 2300 years ago has mentioned the combination of a high palate and ear disease. The question of eugenics is covered by Bauer and Stein thoroughly. The social aspect is of more importance when the individual has grown up. Whether in some instances the so-called mental inferiority in a child comes first or the impaired ear is sometimes like asking which came first, the chicken or the egg. It is necessary to use discrimination concerning actual or apparent inferiority in every instance. A girl came to our school and behaved very antagonistically when I examined her. I learned that she lived with relatives. They were antagonistic to her, and she was not very much in love with them. There was a problem. I inquired whether the child had any preference for anything and was told that she liked music. Therefore I suggested that the school might first cultivate this tendency. It worked as an entering wedge with happy results. I believe that head injuries form an etiological factor in deafness. This is an important circumstance in Detroit on account of the many automobiles. In regard to deafness in rural schools it is necessary that teachers of the deaf be given increased means to travel in order to do field work. Many children and adults who are now a burden to their families and to themselves could have more normal and happy lives if they were helped to overcome their handicaps and make social contacts.

ALLAN WINTER ROWE, PH.D., Boston, Mass. (closing): I have enjoyed this frank and genial discussion of the paper. The basal metabolic rate in itself is an entirely insufficient ground on which to form a diagnostic estimate. In fact, there is no one single test, broadly speaking, which is competent by itself to serve as the basis of a diagnosis. The figures reported for the metabolism rate are rarely truly basal. We have varying levels in the various endocrine disturbances and extraneous elements all operate to raise the level of the observed rate and thus to yield potentially misleading results. Further, our standards of the normal leave much to be desired, particularly in the case of younger people and of those whose physical configuration departs

significantly from the normal. The Harris-Benedict standards are helpful, and our practice is to use both them and the Boothby modification of the Aub-Du-Bois and take the average of the two. In studying the patient we must get all of the measurements that we can and then each test, to assume its full significance, must be interpreted in the light of all of the other evidences available.

Another thing which is a factor of uncertainty is that one cannot rely on the report of the parent or the guardian as to the behavior of the child. The parent may be unduly pessimistic or optimistic and report the child's behavior in a form which is frankly misleading.

Dr. Newhart raised the question of the relation of mental retardation to hearing loss. Our data are not competent to resolve this question in their present form, and it is difficult to analyze the available material. One should work here with a selected group and carry out a series of correlated studies.

In regard to the question of eugenics, the status of the putative otosclerotic child is very far from definitely established. I have recently had occasion to review an elaborate bit of eugenic investigation which has carried the study of heredity over seven generations in individual families in the group and yet the diagnosis of otosclerosis has never been established in one of the children who formed the basis of this investigation. Naturally, if we are to study the hereditary influence in otosclerosis, the starting point would be the child and a proper otological diagnosis must be established if the eugenic study is to have any meaning whatsoever. In the elaborate investigation to which I refer this was not done, and there remains only a massive artefact of negligible significance.

In conclusion, may I express my grateful thanks to the members of this Society for their very kind consideration of this modest paper which I have been privileged to present.

EXHIBIT OF FUNGI PATHOGENIC TO MAN SHOWN AT THE ONE HUNDRED AND FIFTY-THIRD ANNIVERSARY OF THE MASSACHUSETTS MEDICAL SOCIETY*

BY JOHN G. DOWNING, M.D.,† AND S. M. COUSINS, M.A.†

THE pictures on the following pages were taken from an exhibit shown at the meetings of the Massachusetts Medical Society in June, 1934. The purpose of the exhibit was twofold; first, to indicate in a general manner the position of the fungi pathogenic to man in the plant kingdom, their relation to other fungi and to plants as a whole; and, secondly, to present the common pathogens in their more important aspects of diagnosis and culture, the lesion, the appearance of the fungus in tissue from the lesion, and its characteristic spores in culture.

THE PLACE OF FUNGI IN THE PLANT KINGDOM

The plant kingdom is divided into four great groups, the thallus plants, the mosses, the ferns, and the seed plants.

The *thallus plants* (Thallophyta) are so named because they have thalloid bodies, that is, bodies that are relatively simple and undifferentiated. The two sub-divisions of the thallus plants, the *Algae* and the *Fungi*, are distinguished by the presence or absence of chlorophyll, the green coloring matter which enables plants to synthesize carbohydrates from water and carbon dioxide in the presence of light. The *Algae* all contain chlorophyll and are therefore free-living. The *Fungi* all lack chlorophyll and are necessarily parasitic, living on other organisms, or saprophytic, living on the dead remains of other organisms.

The first of the six classes of fungi, the bacteria, cause many serious diseases of plants and animals.

The second class, the slime molds (Myxomycetes), are small saprophytes of no practical importance.

The following classes, called collectively the higher fungi (Eumycetes) are distinguished by the fact that they are made up of thread-like strands (hyphae), either in loose cottony masses as in bread mold or in firm, compact bodies as in mushrooms. They are classified according to their method of producing sexual (perfect) spores, that is, spores that are produced as the result of a sexual fusion of nuclei. They produce also non-sexual (imperfect) spores which help spread the fungus rapidly.

The true molds (Phycomycetes) are distinguished from the following classes by the fact that their hyphal threads contain no cross partitions. They include common black bread mold, fungi that cause diseases of insects and fish, and many important blights and mildews of plants, including the potato blight that was the chief cause of the Irish famine of 1845.

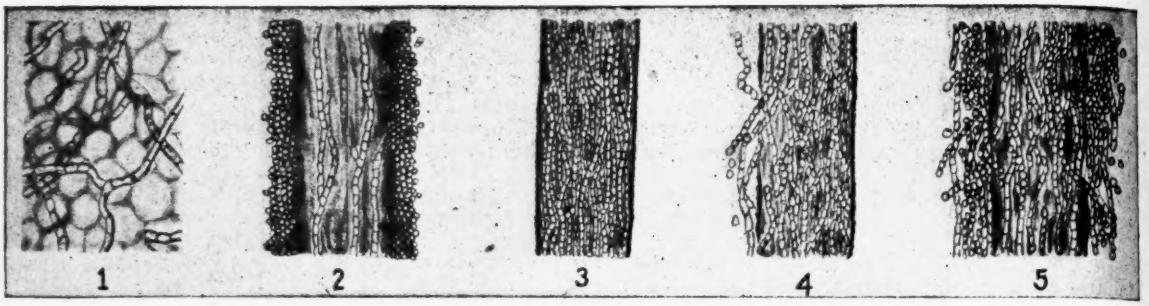
The sac fungi (Ascomycetes) are so called because their sexual spores are produced inside a sac cell (*ascus*). They include yeasts important in brewing and baking, the fungus from which ergot is obtained, and destructive plant pathogens such as the chestnut bark disease that is killing most of our native chestnuts.

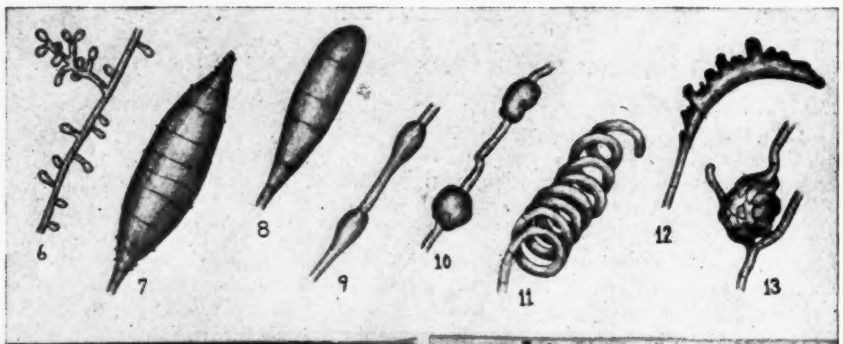
The club fungi (Basidiomycetes) are so named because their sexual or perfect spores are borne on special club-shaped cells (basidia). They include organisms that cause serious plant diseases such as the smut of corn and the rusts of wheat and of white pine, and the mushrooms and puffballs, some of which are important be-

*Mycological work under the direction of William H. Weston, Jr., Professor of Cryptogamic Botany, Harvard University.

Clinical material from Department of Dermatology, Boston City Hospital.

†Downing, John Godwin—Assistant Professor in Dermatology, Tufts College Medical School. Cousins, S. M.—Research Assistant to Dr. Downing. For records and addresses of authors see "This Weeks' Issue," page 983.





FIGS. 1-33. The *Dermatophytes*, a specialized group of imperfect fungi growing on the skin, hair and nails.

FIGS. 1-5. Sabouraud's classification of the dermatophytes, based on the position of the fungus in the infected tissue.

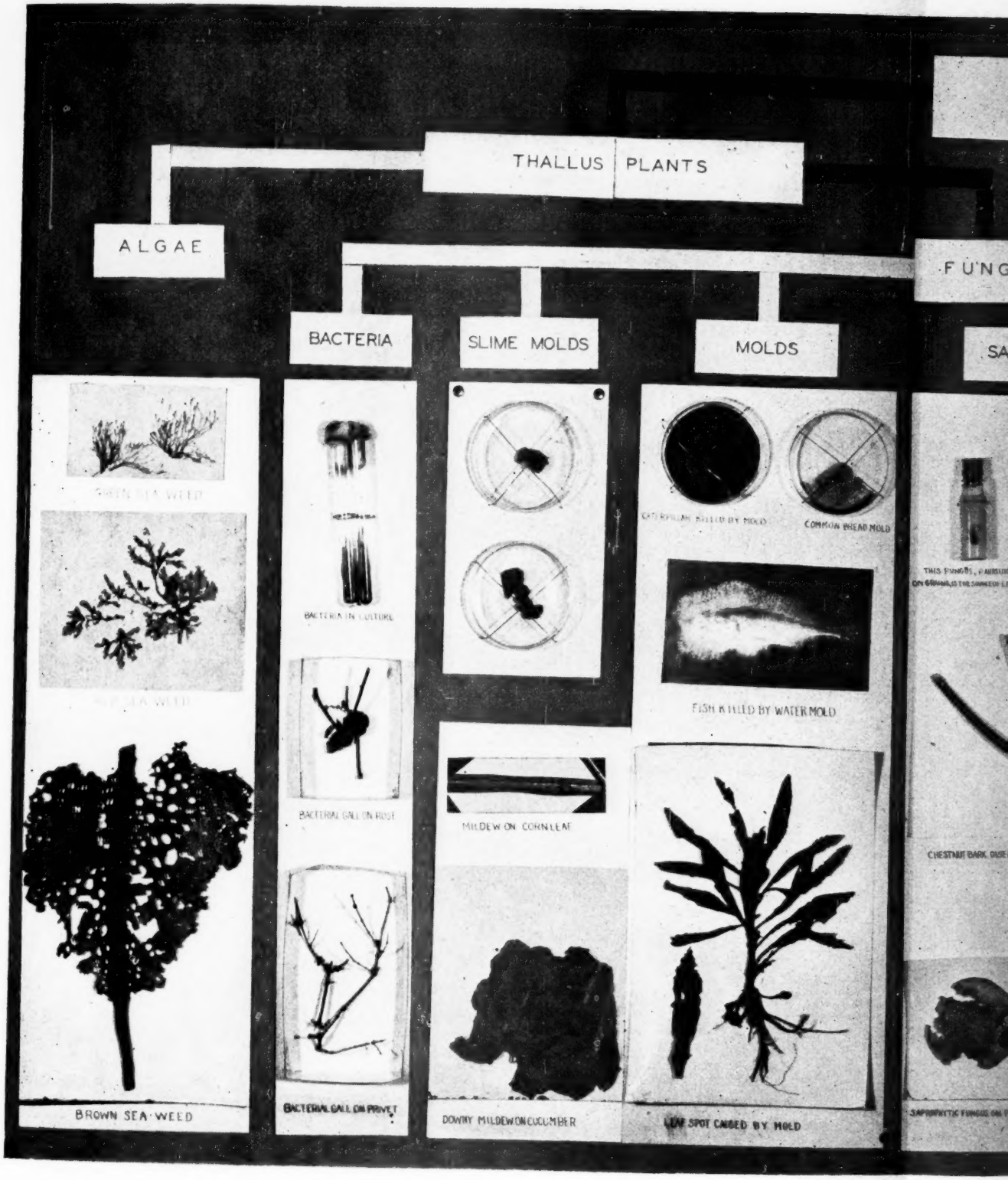
1. *Epidermophyton*—fungus growing in the skin only; never invading the hair.
2. *Microsporum*—fungus growing in the hair, forming a sheath of "spores" in "mosaic" arrangement (not in rows or chains) around the outside of the hair.
3. *Trichophyton endothrix*—fungus growing in the hair, forming "spores" in chains, wholly within the hair shaft.
4. *Trichophyton neo-endothrix*—fungus growing in hair, forming "spores" in chains, mostly inside the hair shaft but with a few strands outside.
5. *Trichophyton ectothrix*—fungus growing in the hair, forming "spores" in chains, abundant outside as well as inside the hair shaft.

FIGS. 6-13. Types of spores and specialized hyphae found on the Dermatophytes when grown in culture, on which various tentative botanical classifications are based.

6. Aleuriospores or meristem spores.
7. Boat-shaped fuseau (spindle spore).
8. Club-shaped fuseau.
9. "Raquette" hypha.
10. Chlamydospores.
11. Spiral hypha.
12. Pectinate hypha.
13. Nodular body.

FIGS. 14-17. *Epidermophyton.*

14. Epidermophytosis of the toes.
15. The fungus in a skin scale.
16. Culture, showing white tufts of so-called "pleomorphic" hyphae growing from the typical colony.
17. The spores borne in culture—club-shaped fuseaux.


THALLUS PLANTS
ALGAE
BACTERIA
SLIME MOLDS
MOLDS
FUNG
SA
BACTERIA IN CULTURE
BACTERIAL GALL ON ROSE
BACTERIAL GALL ON PRIVET
MILDEW ON CORN LEAF
DOWNY MILDEW ON CUCUMBER
CATERPILLAR KILLED BY MOLD
COMMON BREAD MOLD
FISH KILLED BY WATER MOLD
LEAF SPOT CAUSED BY MOLD
CHESTNUT BARK DISE
BROWN SEA-WEED

THE PLACE OF FUNGI IN THE PLANT KINGDOM

MOSSES

FUNGI

SAC FUNGI

CLUB FUNGI

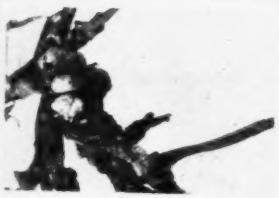
IMPERFECT FUNGI

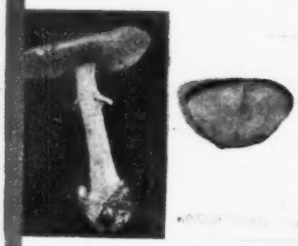
BAKERS YEAST

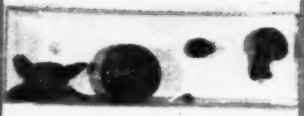
CHESTNUT BARK DISEASE

SAPROPHYTIC FUNGUS ON PAPER

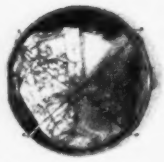
FUNGUS ON INSECT







MORE MUSHROOMS



LEAF SPOT DISEASE

FUNGI
PATHOGENIC TO MAN

LOS ANGELES

CLOTH OF GASKELL ATTACKED BY MOLD

"HAIR CAP" MOSS

"WHITE" MOSS

MOSSES

FERNS

SEED PLANTS

CONE-BEARING PLANTS

FLOWERING PLANTS

HITE MOSS

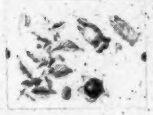
TREE FERN

HORSETAIL

PINE CONE

PINE TREES

FIR TREE



BELLADONNA (DEADLY NIGHTSHADE)

WILLOW TREE

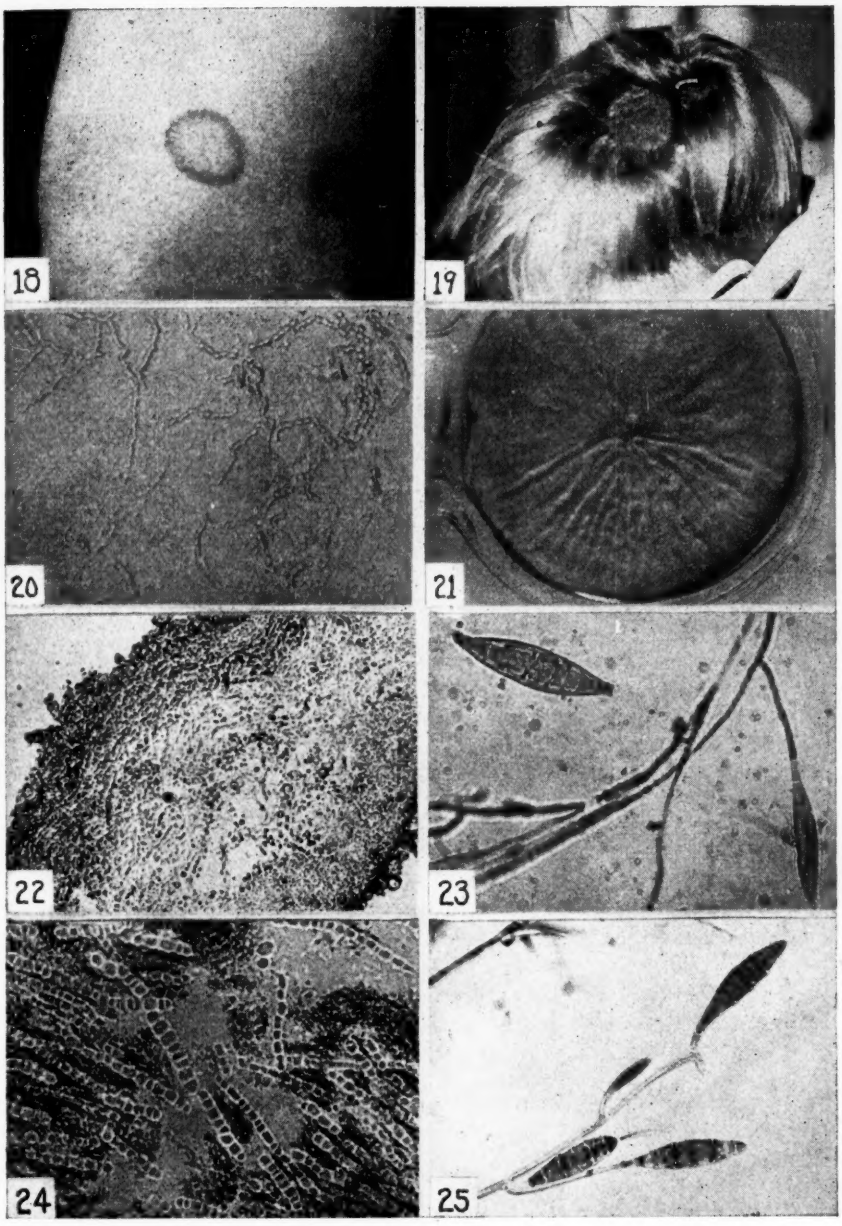
WATER LILY

SUGAR CANE

POTATO

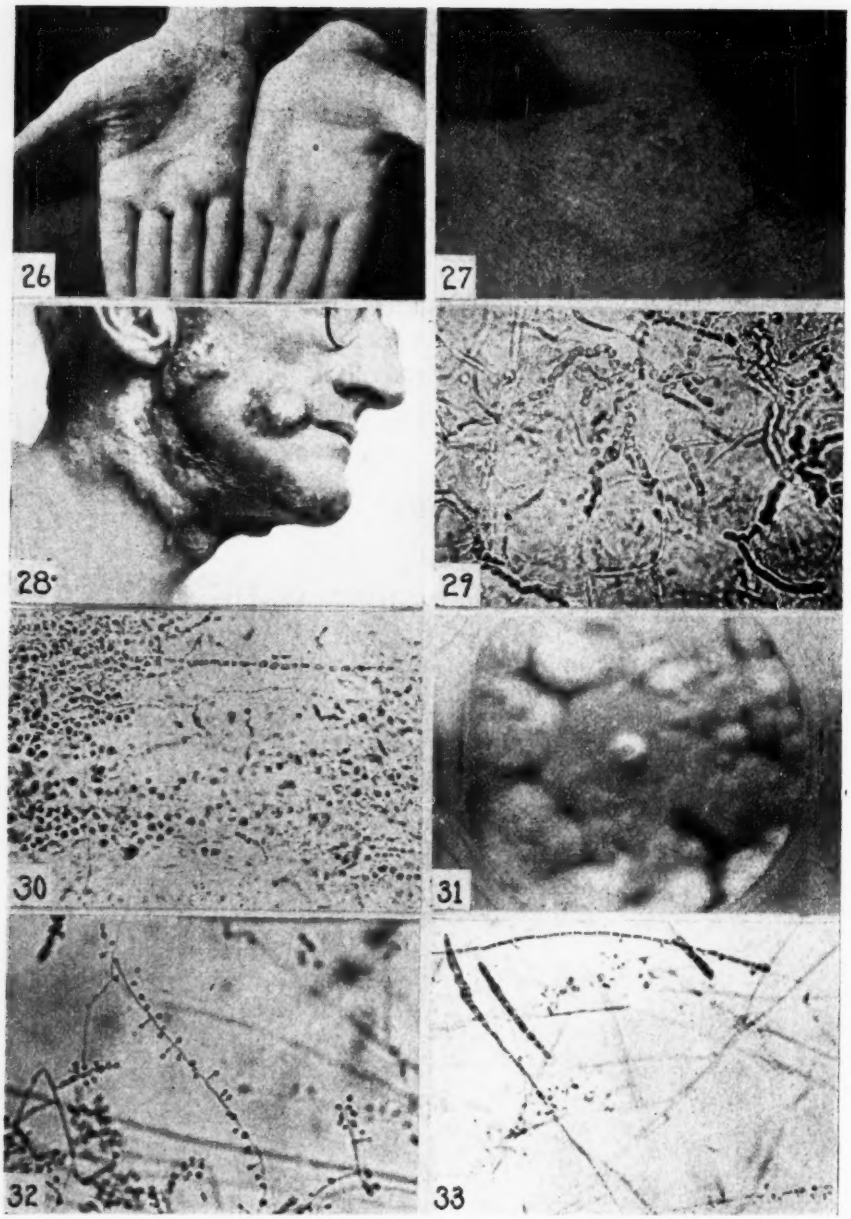
WHEAT

UNIV. OF MICH.



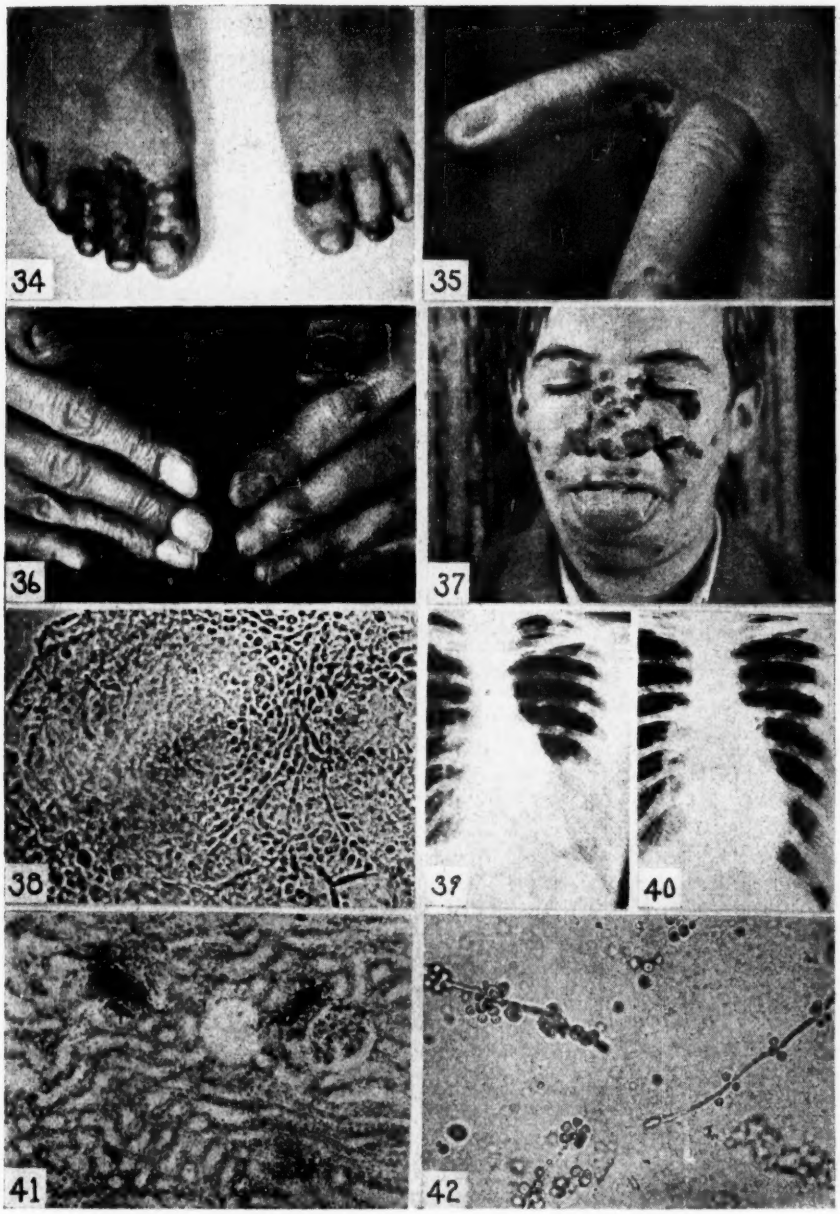
FIGS. 18-25. *Microsporum.*

18. Ringworm of the smooth skin.
19. Ringworm of the scalp.
20. The fungus in a skin scale.
21. Culture (*Microsporum lanosum*).
22. The fungus in a hair (*Microsporum lanosum*).
23. The spores borne in culture—boat-shaped fuseaux (*Microsporum lanosum*).
24. The fungus in a hair, greatly magnified (*Microsporum gypseum*).
25. The spores borne in culture—boat-shaped fuseaux (*Microsporum gypseum*).



FIGS. 26-33. *Trichophyton.*

26. Trichophytosis of the palms.
27. Trichophytosis of the smooth skin.
28. Trichophytosis of the beard.
29. The fungus in a skin scale.
30. The fungus around a hair of the beard.
31. Culture.
32. The spores borne in culture—aleuriospores or meristem spores.
33. The spores borne in culture—meristem spores and irregular fuseaux.

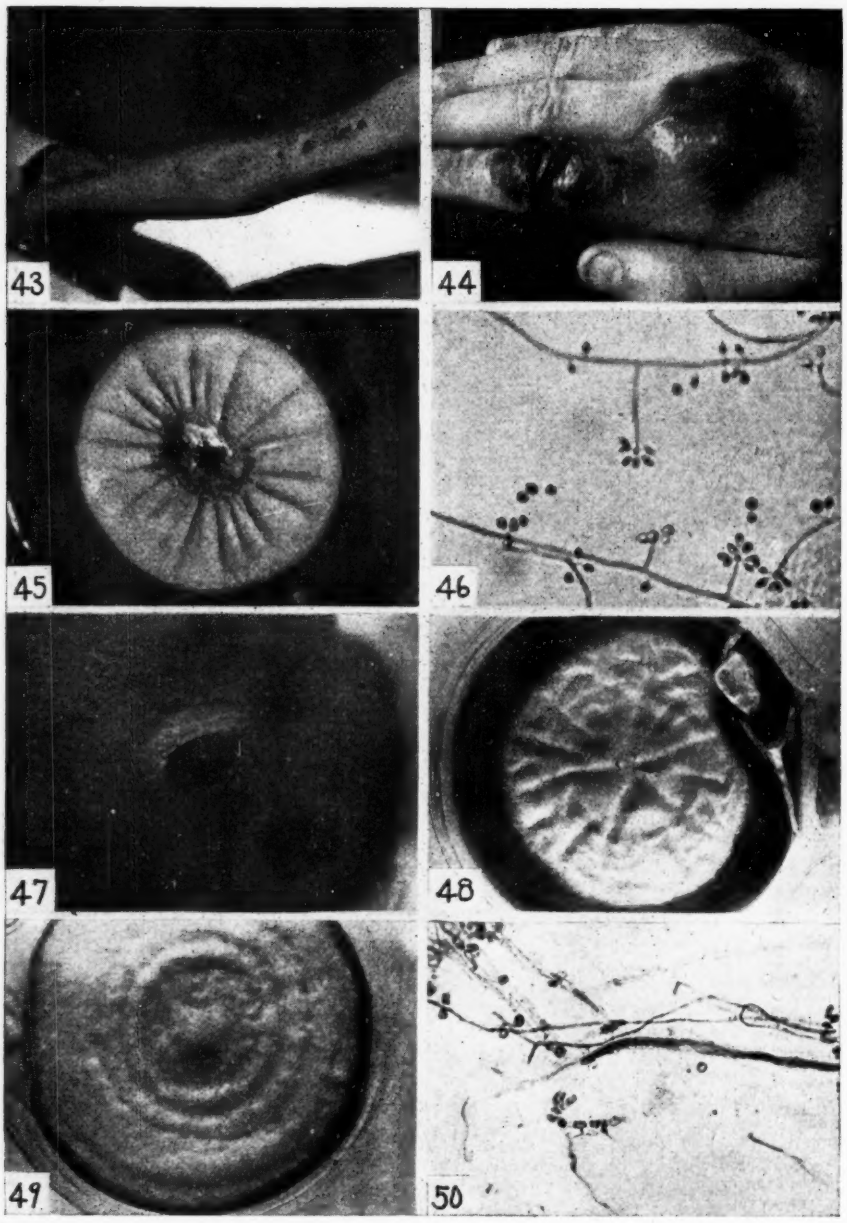


FIGS. 34-42. *Monilia*, a yeast-like imperfect fungus.

34. Moniliasis of the toes.
35. Moniliasis of the finger webs ("Washerwoman's eczema").
36. Moniliasis of the nails; note transverse ridges.
37. Moniliasis of the face and tongue.
38. The fungus in nail tissue.
39. Moniliasis of the lungs, showing density in the left mid-chest.
40. Moniliasis of the lungs, showing the left mid-chest entirely cleared six months later.

(Figs. 39 and 40 through courtesy of Dr. H. J. Bakst, Dr. J. B. Hazard, and Dr. J. A. Foley. Pulmonary Moniliasis, J. A. M. A. 102:1208-1213. 1934.)

41. The fungus (stained) in kidney tissue of rabbit injected with *Monilia*. (Through courtesy of Dr. R. N. Nye, Dr. L. G. Zerfas, and M. A. Cornwell. The Pathogenicity of Yeast-like Fungi Isolated from the Human Gastrointestinal Tract. Amer. Jour. Med. Sci. 178:515. 1929.)
42. The fungus in culture, hyphal strands and budding spore forms in agar.



FIGS. 43-46. *Sporotrichum.*

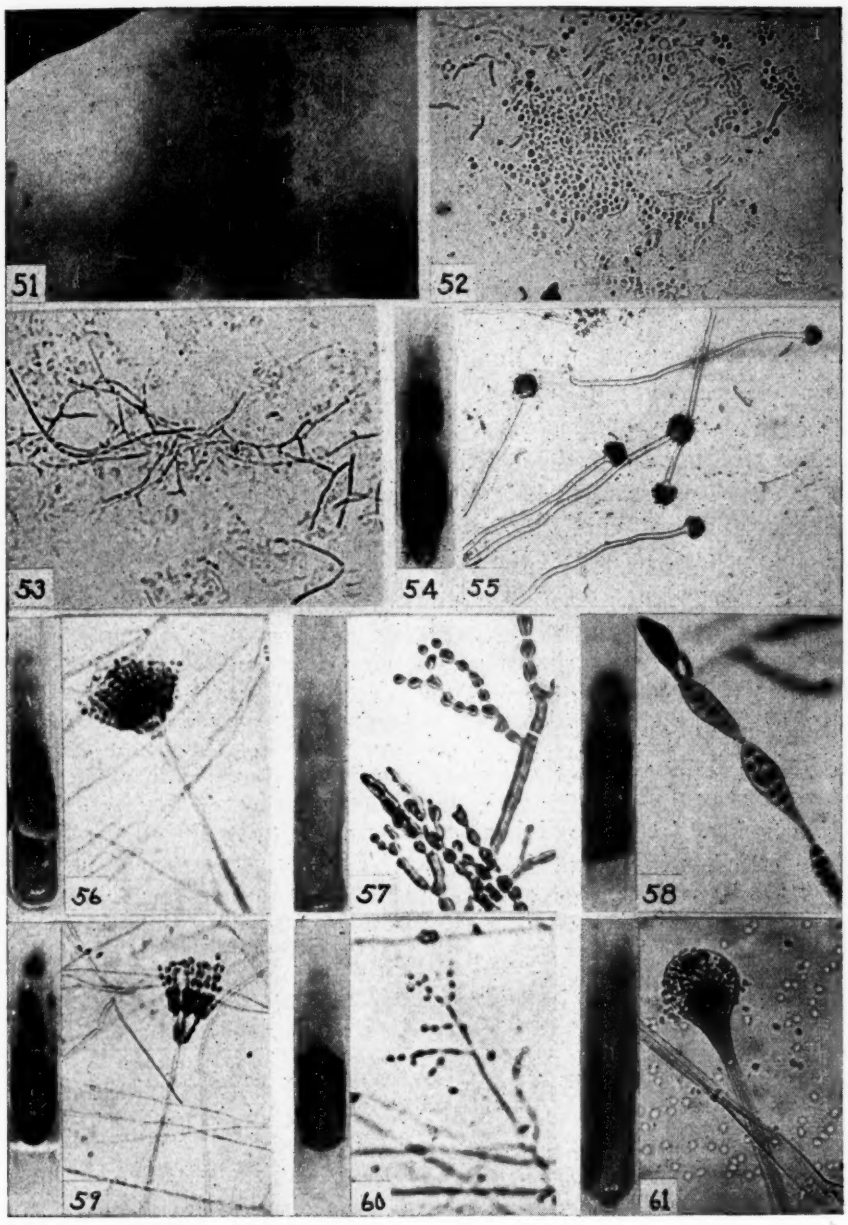
43. Sporotrichosis, secondary lesions in lymph glands of the arm.
44. Sporotrichosis, primary lesion on finger and a secondary lesion on hand. (The dark stain is iodine.)
45. Culture.
46. Spores borne in culture; note especially those borne on the sides of the hyphae.

FIGS. 47-48. *Blastomyces.*

47. Lesion of Blastomycosis on the neck.
48. Culture.

FIGS. 49-50. *Coccidioides.*

49. Culture.
50. The fungus in culture; note the absence of any true specialized spores.



FIGS. 51-52. *Malassezia*, a saprophyte in the dead outer skin.

51. Lesions of Tinea versicolor on back.
52. The fungus in a skin scale; note abundant round "spores" and short hyphal threads. This fungus is not known with certainty to grow in culture.

FIGS. 53-55. *Aspergillus niger*, a semi-saprophyte on wax and cellular débris in the outer ear.

53. The fungus in wax and cellular débris.
54. Culture; note black spore heads.
55. The spores borne in culture, small round spores in chains, borne on the swollen tips of specialized hyphae.

FIGS. 56-61. Common contaminants in cultures, and their characteristic spore forms.

56. Aspergillus (green mold).
57. Neurospora (Monilia) (orange mold).
58. Alternaria (usually black or dark green).
59. Penicillium (blue-green mold).
60. Hormodendrum (black or dark green).
61. Mucor (black bread mold).

cause they contain violent poisons, and some because they are edible.

The fungi that are placed in the last class, the imperfect fungi (Fungi Imperfecti), resemble those of the three preceding classes in that they are composed of hyphal threads, but differ from them in that, so far as is known, they produce no sexual or perfect spores, but only non-sexual or imperfect ones, hence their name. Any hyphal fungus which has no known perfect spores is placed in the imperfects; it will be seen, therefore, that the imperfects are not a homogeneous, closely related group as are the other classes, but rather a dumping ground for forms whose true position cannot yet be determined. The group contains many important organisms, the green bread molds, the characteristic molds of cheeses, various plant pathogens, mildews that rot cloth, and, most significant for our purpose, almost all the fungi

The *mosses* (Bryophytes) and *ferns* (Pteridophytes) are small groups of no great economic importance, which reproduce by spores as do the thallus plants but have well differentiated tissues suggesting those of seed plants.

The *seed plants* (Spermatophytes) are the most highly developed group, and are dominant in our vegetation to-day. They are divided into two groups, the cone-bearing plants (Gymnosperms) comprising the evergreen trees and shrubs; and the flowering plants (Angiosperms) that include most of our food and drug plants, ornamentals, grasses, weeds, and broad-leaved trees.

COMMON FUNGOUS DISEASES

The illustrations show the important diagnostic and cultural aspects of the more common fungi pathogenic to man.

Diagnosis is suggested by the appearance of the lesion and completed by finding the fungus in the tissue or growing it in culture. To make a direct examination of the tissue, in skin diseases pull out hairs, scrape off scales or clip off tops of vesicles in the most active part of the lesion; place some of them on a glass microscope slide in a drop of thirty per cent potassium hydroxide and put a coverslip on the drop; let it soak from fifteen minutes to several hours until the tissue is cleared and transparent under the microscope (this process may be hastened by warming the slide gently over a flame); examine with low and high magnifications for hyphal threads and "spores". In systemic diseases, according to the type of disease remove and examine pus, sputum or tissue from the lesion.

To make a culture, plant the rest of the fragments of tissue in tubes of Sabouraud's "proof" agar (glucose 4 Gm., peptone 1 Gm., agar 2 Gm., water 100 cc.). Keep the tubes at ordinary room temperature. Some pathogenic fungi are very slow growing and may not appear until three or four weeks after planting. Plant a large number of fragments, since some pathogens are quite difficult to obtain in culture.

The pathogens should not be confused with other fungi that occur very commonly as contaminants in such tubes. Most pathogenic fungi are white or shades of yellow, and slow growing. Green or dark-colored colonies and light-colored colonies that fill the tube in a few days are usually contaminants.

THE 1934 MORTALITY RATES DUE TO AUTOMOBILE ACCIDENTS IN THE UNITED STATES*

Beginning in January of the present year with a peak mortality rate of 28.1 per 100,000 inhabitants, the seasonal decline reached its low point of 18.2 in March and has risen with one exception in July and August to 26.0 in October.

If the records of previous years prevail, the rate will continue to rise to a peak in January, 1935.

For the first forty-three weeks of 1934, the rate was 22.4 as compared with 20.9 for the same period in 1933.

*Deaths reported from eighty-six large cities.

NOMINATIONS BY GOVERNOR ELY

Among the names presented to the Council for confirmation November 14, 1934, were Dr. John Francis Curtin of North Abington, medical examiner, to succeed the late Dr. Gilman Osgood, and Dr. William Joseph Pelletier of Turners Falls, associate medical examiner, to succeed the late Dr. Richard McGillicuddy. Both Dr. Curtin and Dr. Pelletier are members of the Massachusetts Medical Society.

NEW ENGLAND SURGICAL SOCIETY

HUGH OWEN THOMAS*

The Man and His Work

BY DANIEL C. PATTERSON, M.D.†

THIS is not a critical study of Dr. Thomas or his work, but simply the story of a small, frail man, who, never in robust health, labored unceasingly in the byways of Liverpool for the good of humanity and the love of his art. Endowed with unusual ability, from his large experience he formulated principles and established methods that revolutionized the treatment of diseases of the bones and joints, and saved innumerable limbs and lives. During the World War his well-known splint reduced the mortality of compound fractures of the femur from eighty to twenty per cent. It is quite fitting that on the one-hundredth anniversary of his birth we should pause to do him honor.

Sir Thomas Browne wrote, "The iniquity of oblivion blindly scattereth her poppy and deals with the memory of men without distinction to merit of perpetuity." Dr. Osler after quoting this passage adds, "Thus it happens that Thomas Dover, the doctor, has drifted into our modern life on a powder label, while Captain Thomas Dover, the buccaneer, and discoverer of Alexander Selkirk, in spite of more enduring claims on our gratitude, has been forgotten." In like manner it might be said that the fame of Hugh Owen Thomas has come haltingly to us on a splint, while the epoch-making principles that he enunciated and put into practice are not generally credited to him. This would not be to Dr. Thomas' liking for at one time he remarked to Robert Jones, "I hope I shall not be remembered as an inventor of splints, for any mechanical fool can do that. The idea to which they give effect is the important point."

I believe it would have pleased Sir Robert Jones to know that this society of which he was an honorary member was devoting part of its time in honoring the memory of his uncle, for he rather touchingly alluded to the lack of recognition Dr. Thomas had received at the hands of the profession he loved so well.

The Thomas splints; the Thomas braces; the Thomas wrench; the anterior heel; and Thomas methods for this or that are bywords in the profession, but little is generally known about the man himself. His originality of ideas; his indefatigable energy; his ingenuity; and love of humanity are worth investigating.

Hugh Owen Thomas was born August 23, 1834 in Angelsea, Wales. His father was a practicing bone-setter, the seventh in direct line of descent who had followed that occupation. That the father, Evan Thomas, knew the shortcomings of his own work is evidenced by the fact that he had five sons, all of whom became qualified surgeons.

Owen Thomas, a frail child and unable to indulge in the usual sports of youth, was always a student. In 1851, at the age of seventeen, he was apprenticed to his uncle Dr. Owen Roberts of Wales. Dr. Roberts was a man of culture and did much to mold the character and mind of his nephew. He prepared him for Edinburgh University in four years. Thomas was at Edinburgh at the time that Lister was Symes' House surgeon and was carrying out his experiments on antisepsis. After two years at Edinburgh he entered University College, London, and received his diploma from there in 1857. He became a member of the Royal College of Surgeons and after spending several months studying in Paris returned to Liverpool and entered practice with his father. Robert Jones describes the elder Thomas as follows: "He was slow, methodical, morose and silent,—never a smile or a jest,—and the atmosphere of the establishment was as gloomy and forbidding as a sepulcher."

Apparently these bonesetters were well-established, and some of them were men of ability. Evan Thomas was conservative and capable, and unquestionably Owen Thomas, with his power of observation, learned much from him. However, he wrote of their work as follows: "In the practice of bone-setting (and I presume he included in this their whole field of labor), nothing is to be found that can be added to our present knowledge. That some were in a few special matters superior to their qualified contemporaries I know to be a fact, but this assertion does not apply to their general knowledge. Concerning diseases of the joints, I never met with the slightest evidence that any of them had any knowledge of the subject, or a method of treatment, which was not utterly wrong."

One can easily understand why Thomas and his father soon parted company. The younger man, with his never-ending search for the reason of things, his continuous stream of ideas, and his criticism of established methods was not content to fall into the routine of his father's office. He had to have freedom to think and act. Goethe has said: "Thinking is easy; act-

*Read at the Annual Meeting of the New England Surgical Society at Burlington, Vermont, September 28, 1934.

†Patterson, Daniel C.—Attending Surgeon, Bridgeport Hospital. For record and address of author see "This Week's Issue," page 983.

ing is difficult. To act in accordance with one's thoughts is the most difficult thing in the world." Thomas was a man who could do this.

He established an office of his own nearby and was not long in securing plenty of work. This office was located near the dockyards, and from them Thomas drew most of his patients. They were loyal and devoted to him, and in him they had a staunch and generous friend. This connection furnished him with a wealth of material.

In 1864 he married Elizabeth Jones, the aunt of Robert Jones, and nine years later young Jones, at the age of seventeen, entered their home as an apprentice. This proved to be one of those fortunate alliances. The Thomases had no children of their own and were devoted to their nephew. Dr. Thomas directed his education, and no doubt was in a large measure responsible for Jones' success. Jones on his part contributed much to the happiness of his uncle and aunt, and has been the Thomas Boswell, a position not easy in the early days when Thomas worked practically alone against professional indifference and opposition.

In 1870 Dr. Thomas moved to 11 Nelson Street, Liverpool, and continued in practice there until his death in 1891. This office became the mecca of visiting surgeons from the Continent and the United States, and is no doubt familiar to some of those present. It is still in active operation under Mr. T. P. McMurray. Robert Jones joined his uncle there as assistant in 1878, at the age of twenty-one.

In reviewing Dr. Thomas' work it must be borne in mind that during his time, antisepsis was in its experimental stage; Roentgen had not developed the x-ray; and although the electric bone saw was invented in 1888 it was not in general use. It appears to have been re-invented in recent years.

Dr. Thomas never had a hospital appointment. His work was done in his office, in the patients' or in nursing homes, or in a small hospital he established near his office. His establishment was complete in itself. On his premises he had a smithy with his own blacksmith; splint makers; leather workers; and plaster rollers. He was able to do cleaner work there than was done in the hospitals, for at that time the hospitals were, according to McAllister, in a deplorable state of uncleanliness. Doctor Ridlon tells of seeing Macewen wearing a discarded light overcoat, spattered with blood and pus, as an operating gown.

The amount of work done by Dr. Thomas is almost unbelievable. He carried on a general practice to the end, which of course necessitated many outside visits. He told Dr. Gibney, who visited him about 1889, that he saw 100 patients daily, and 200 on Sundays, a day that he devoted throughout his life to a free clinic. Dr. John Ridlon, on one of his visits, counted 146 patients in the office. When you consider that many of these cases were operative, such as reduction of fractures and dislocations, the applications of splints, and casts, tenotomies and lithotomies, the wonder grows.

Robert Jones in his First Thomas Memorial Lecture describes a day in Thomas' life. I will briefly summarize it: "At 6 A.M. he starts out, and makes ten or twelve calls before breakfast. This meal generally occupied ten minutes and consisted of a cup of tea and two bananas. From nine until two he is at work in his office where he meets with every variety of cases, both medical and orthopedic. There are one or two cases of fracture every morning. A fracture of the thigh in a child or adult was treated at once by fixation in a Thomas knee splint, with sheet iron splints surrounding the thigh, and the patient sent home. . . . On most days a case of club foot is seen in a baby and treatment is at once commenced. The heel is washed. Thomas selects a tenotome. He dips this into carbolic acid and forthwith divides the tendon, manipulates the foot into position, and fixes it in a club foot shoe. No anesthesia is given. The procedure from first to last does not take five minutes. I must have seen over a thousand of these treatments performed by Thomas, with what one would now consider most inadequate preparation, but I never knew a case in which suppuration occurred.

"His midday meal was very simple and occupied twenty minutes. He generally had one or two visiting doctors to lunch and discussed his cases with them.

"The afternoons were devoted to calls on house patients, and operations. He had gained quite a reputation for his treatment of stone in the bladder and had invented special instruments to simplify the operation. These cases were all treated as out patients, and no anesthetic was given.

"After his dinner he hurried from the table to see his evening flock who continued to come until eight.

"In spite of his strenuous day he is bright and cheery. He then made his last rounds of his most serious cases, such as compound fractures and intestinal obstruction. From 9:30 to 12:00 he either worked in his lathe room making new surgical instruments, repairing old ones, or he would find his way to the library to read and write.

"To anyone who knew Thomas with his frail body and his anxious mind, entering wholeheartedly into his patients' troubles and always unsparing of effort, it is a marvel how he could continuously work at such pressure for over thirty years, for it must be remembered that he never took a holiday."

It is said that Thomas was away from home only six nights during his professional career.

This continuous high pressure labor is rather amusing in the man who so persistently advocated the value of rest. He evidently sang with old Teufelsdrockh, "Rest! Rest! Have I not all eternity to rest in?"

He prefaced one of his pamphlets with the quotation, "Wherefore I perceive that there is nothing better than that a man should rejoice in his own works, for that is his portion, for who shall bring him to see what shall be after him." Again he says, "To retire from work is simply to die before one's time." Thomas undoubtedly shortened his own life by overwork.

All through his life Thomas was striving to get at the basic principles upon which treatment could be rationalized. He wrote, "To me it appears an anomaly that the surgeon should have to make a choice of theories. The principles of treatment should not be left to the discretion of the surgeon, but should be unalterable. The theory must first be settled and the mechanics will right themselves." And again, "A purpose may be attained by various methods; a principle, if correct, has only one face."

To his mind the principle of rest was the governing factor in recovery from disease. He wrote, "Nature cannot be hurried. All we can do is not to thwart her." This is in line with Paré's remark that the first rule of a surgeon "is to do no harm".

He preached the necessity of rest for diseased or injured parts at all times, and put this great adjunct of treatment on a sound basis. His ingenious splints and braces were designed to carry out this basic principle, and according to the *British Medical Journal;* "The appliances he invented and finally perfected have not yet been improved upon—modern so-called improvements have been retrograde."

Dr. Thomas was a careful observer and faithful note taker, so from his large experience could speak with authority. Watson says of him, "He knew more about the surgery of bones and joints than any living man and had the largest practice of its kind in the World."

That Thomas was not in the good graces of his contemporaries is well known. Jones speaks of him as "ploughing a lone furrow" and "that he preached as one in the wilderness, when his work was either ignored or discountenanced", and Watson, in his "Life of Sir Robert Jones," says: "Throughout his life Thomas remained outside of the professional camp." Dr. John Ridlon, who was the first American surgeon to visit Thomas, said that he had visited all the leading surgeons in England, and not one of them had a kind word to say for Thomas, yet he saw nothing in their hospital clinics that could compare with the work Thomas was doing.

The antagonism he encountered in his own city may have been due in part to his early association with his bone-setter father, and to his blunt honesty in exposing false theories and practices. The number of visitors he had from foreign ports, however, shows that he was a prophet not without honor.

It speaks volumes for the tact and character of Sir Robert Jones that he was able to bridge the gulf between the originality of Thomas' ideas and the prejudices of his fellows: I believe it was Dr. John Ridlon who once said, "One of Jones' greatest works was in making Thomas' ideas acceptable to the medical profession."

The time is too limited to give more than a glimpse at Thomas' numerous contributions. Professor Arthur Keith in a lecture at the Royal College of Surgeons of England, said, "No one who will take the trouble to ascertain what he did, and the circumstances under which he accomplished his life's work, will fail to see that he has earned himself a place among great British Surgeons."

There was at least one fair-minded surgeon with vision in Liverpool, who, after seeing some of Dr. Thomas' diseased joint cases under treatment, appreciated the great importance of his work. This was Rushton Parker who remained a stalwart supporter of Thomas throughout his life, and persuaded him to start publishing his ideas and methods.

In 1873 Thomas published his first pamphlet, the subject being, "Compound Fractures of the Lower Jaw." He advocated drilling the maxillary bone and wiring the fragments. He had designed an ingenious device for tightening and loosening the twisted wire. Two years later he published the first edition of his volume, "The Treatment of Diseases of the Hip, Knee and Ankle Joints," and it was in this work that his splints were first described.

While a student in Edinburgh and London, Thomas had been deeply impressed with the large number of amputations performed for joint disease. It is recorded that in 1865, at the University College Hospital, there were two hundred operations performed, forty being amputations. In 1912 there were two thousand operations, eighteen of which were amputations. Thomas set himself against this practice, and his success in saving innumerable limbs and lives is one of the brightest pages of surgical history. The operation of excision of joints was coming into vogue at the time, and had strong sponsorship. Thomas fought this procedure vigorously, and we find in his writings: "As regards the excision of joints, my experience will not allow me to endorse the opinion of Professor Spence that this operation is 'so obviously an advance in the right direction,' but I have been convinced that it is a step in the wrong direction, and is too frequently an excuse and a ready way of disposing of the difficulty, to the neglect of sufficient attempts at saving the articulation. Joints, when treated by the ancient method or by some of those recently introduced by some of my contemporaries may, nay do, frequently arrive at a condition where no alternative remains except

excision." He immobilized the diseased joints and put his patients in the fresh air.

He was one of the first to advocate the fresh-air treatment of tubercle. He was a pioneer in the work on nerve injuries and paralyzed muscles.

He considered his volume on the "Treatment of Intestinal Obstruction" his best work. It was a work that raised considerable discussion and much criticism. At the time he wrote there were probably some reasons for his claims which would not hold true to-day*.

Some of his principal contributions were "Inhibition of the Nerves", "Principles and Treatment of Joint Diseases", "Principles and Treatment of Fractures and Dislocations", "Injuries and Diseases of the Trunk and Upper Extremities", "Fracture of the Patella", "Fracture of the Neck of the Femur", "The Operation of Lithotomy".

One of his last publications, "A Review of Past and Present Treatment of Joint Diseases" was, according to Jones, controversial in character, criticizing the practice of his predecessors and contemporaries, especially the American School. Of their work he said: "Their theory is ancient though their practice is new, but they have omitted what was good in the old practice and held onto that which was bad." This naturally did not gain him many friends in the United States.

Up to 1874 Thomas operated on ununited fractures. He then began his treatment to stimulate union. This consisted in daily percussion over the site of fracture, with a felt-covered hammer. This was rather severe and produced considerable bruising; however, he reported many successful cases, one a fractured tibia of fifteen months' duration which was consolidated in six weeks.

About 1880 he introduced another method of stimulating slow healing by damming the circulation. This he did by tying a piece of rubber tubing above and below the seat of fracture. This was applied for an hour a day at first, and the time was gradually lengthened until the tubing would be left on most of the day. Sir Robert tells how a distinguished German surgeon visited Thomas, and how delighted he was with the method. Later this same surgeon described this method of treatment, but allowed his readers to infer that the idea was his own.

While Thomas was a skillful operator, he avoided operations if possible, and in many cases secured better than operative results by his painstaking method. This caused Robert Jones to wittily remark, "There prevails even now a tendency to cut many of our surgical knots and to decry efforts at untying them."

Thomas was accused of being a bitter critic, and it was said of him that "he loved an enemy more than a friend." If "opponent" had been used instead of "enemy" there might be some truth in it, for he delighted in discussion and argument of medical questions. "He blurted ungrateful truths" and exposed what appeared to him to be fallacious, yet he always gave credit where credit was due, and made no claims on his own account until he was sure of his ground.

An example of his, shall we say, frankness, is found in a criticism of the methods of treatment of hip disease that Dr. Sayre of New York had demonstrated in England. He said, "I have seen several instances in which his apparatuses were skillfully applied, and from personal knowledge I am satisfied that in not one of these cases was the disease arrested or even benefited."

After quoting an extract from an article by Sir James Paget he says, "The foregoing quotation is utterly at variance with my own personal observation."

Further, in a criticism of Dr. Sayre's book, he quotes from Dr. Sayre's preface, "It contains many expressions which I would like to change," and says, "It was Dr. Sayre's duty as a public teacher to change anything of the correctness of which he had a doubt," also, "This is certainly an injurious degree of manipulation and might do more harm in ten minutes than the surgeon could undo in ten days."

I mention these instances to show the courage of the man, for it was not easy to question established authority, and medical martyrdom was no more to be desired then than now. Always tolerant of criticism himself, he couldn't understand why others should not be equally broad-minded. Robert Jones wrote of him, "Introspective and transparently honest he was incapable of deceiving himself and before he ventured to teach he believed he was on solid rock. He was always in search of the truth, with a burning zeal for his art, and sincerely attached to the poor. He was kind and generous, with no bitterness of mind." That he was generally right is attested to by the *British Medical Journal*, which proclaimed, "Of no man can it be more truly said that time has justified his teaching and practice."

A glimpse at the personality of this remarkable man may interest you. Sir Robert Jones who as he says "lived with him in close and affectionate communion for over twenty years of the most strenuous period of his professional life", describes him as a striking figure: "thin and pale, about five feet, four inches in height. He always wore a closely buttoned black frock coat and a peaked cap to shelter an injured eye from the light. He had a bubbling sense of humor and a prodigious memory."

He is also described by others as the most approachable and kindly of men. Drs. Ridlon and Gibney who visited him in the eighties, found him the soul of hospitality and were devoted to him. Dr. Gibney never tired of telling stories about Thomas; how he would take him

*A study of his case records in the light of our present knowledge makes me believe that most of his cases were the result of appendicitis, at that time an unrecognized disease.

to see his patients, riding in his big-wheeled dog cart made from his own design on his own premises; how he would stamp his braces and casts with a branding iron labeled H. O. T.; that he smoked cigarettes almost continuously, and had a highboy drawer in his office filled with them. He once told Dr. Gibney that he could "do more surgery for a shilling than the London surgeons could do for a pound", a much better boast than bragging of high fees.

How Thomas found time to indulge in any studies outside of his professional work is a mystery, but the extent of his interest and knowledge was unusual. He was very fond of music, knew all the operas, and was a fair performer on the flute.

He was a student of history, theology and Egyptology, and wrote various articles on these subjects. A week before he died he read a paper on "The Technique of the Ships of Early Historic Times."

Frederick Watson tells of Thomas' answers to a set of questions in one of those "confession books" that give an insight to his character:

Your favorite virtue? Perseverance.

Your favorite quality in man? Fortitude.

Your idea of happiness? To be always in action.

Your idea of misery? Everlasting rest.

Your pet aversion? A successful hypocrite.

Your favorite motto? ON.

Dr. Thomas died on January 6, 1891 of pneumonia. At his funeral the minister epitomized his life in a few words, "Each day he wrought with his might as though it was his last and only chance."

The *Lancet* told how tearful thousands lined the streets to pay last tribute to their friend and benefactor.

To quote Robert Jones again: "His life work is an inspiration to all who fight for new principles, for with scarcely a helping hand he struggled through the usual stormy waters opened up by pioneers, and he died having added lustre to the profession he loved."

CINCHOPHEN AND AMIDOPYRINE DANGEROUS TO HEALTH AND LIFE

Widespread use of two dangerous drugs — one which destroys the liver and the other which kills the white corpuscles of the blood— brought a warning November 12 from the Federal Food and Drug Administration. These drugs are cinchophen and amidopyrine. Cinchophen, a chemical anodyne and sedative, is sometimes used by sufferers from neuralgia, rheumatic pains, neuritis and similar conditions. Amidopyrine is frequently found in headache remedies and other pain killers.

"Current medical literature contains many reports which clearly indicate that these drugs are dangerous to health and life," says W. G. Campbell, Chief of the Food and Drug Administration. "The gradual development of serious poisoning from the use of these drugs is often so insidious that the danger is not recognized by the user. Cinchophen causes a degeneration of the liver cells. Amidopyrine may cause a reduction in the number of white blood cells, a condition called agranulocytosis."

In issuing the warning Mr. Campbell made it plain that he was not implying that all headache and rheumatism remedies contained these dangerous drugs. But the fact that some of them do is sufficient reason for the public to be careful. Several manufacturers declare on their labels the presence of these drugs in their medicines, but others do not. There is no provision in the Food and Drugs Act to compel manufacturers to declare either of these drugs.

The Federal Food and Drugs Act requires manufacturers to declare upon the labels of their products the presence of several narcotic drugs. When the law was passed cinchophen was unknown and the dangerous effects of amidopyrine had not been recognized. For these reasons these drugs were not included in the list.

Under present conditions buyers should observe wo precautions. First, read the label and look for statements of the presence of these drugs. If they are not declared and there is any doubt ask the druggist or write to the Food and Drug Administration in Washington and ask for the facts.

EDITORIAL NOTE: In connection with this, the following excerpt of a letter received from Parke, Davis & Company may be of interest:

"It is our opinion that amidopyrine is a very useful drug and that its intelligent therapeutic application should not be abandoned because of the fact that under certain conditions it is capable of doing harm. The same thing is true of many other medicinal substances. If we were to eliminate from the Materia Medica all drugs which might, under certain conditions, be harmful there would not be very much left in the way of potent medication."

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.

CASE 20471

PRESENTATION OF CASE

A twenty-two year old American radio worker entered complaining of epigastric "hunger" pains.

Three to four years before entry the patient experienced a vague gnawing epigastric pain occurring approximately half-way between meals. This was not present every day but occurred at intervals of usually three to four days. The pain was not disabling and he continued to work. It did not occur at night and was completely relieved by food. His physician put him on a cracker and milk diet with feedings every four hours for about two weeks. This stopped the pain completely. At about this time he became constipated, often not having a bowel movement for a week. There was no jaundice. He was forced to take enemas to relieve the constipation. His appetite was good. There was no pain or vomiting at this time. After approximately five months all his previous symptoms returned. Again he found that food, especially crackers and milk, relieved his epigastric pain. During the next two years he had relapses and remissions. The attacks usually lasted a few days and were always relieved by food. Occasionally the pain would occur at night and he would be forced to get up and walk around. Nine weeks before entry he went to an army camp where he felt well for about one week, although his bowels did not move. At that time he took a cathartic following which he had an exacerbation of the pain, and since then it had occurred every day and night. It was relieved by food but only after a period of from one to two hours. His constipation persisted. There was no vomiting or hematemesis.

His family, social and past histories are noncontributory.

His work consisted of soldering; he was exposed to lead.

Physical examination showed a well-developed and nourished young man in no apparent distress. His skin was tanned. His teeth were carious. Examination of the chest was negative. Examination of the abdomen showed a cylindrical mass deep in the epigastrium which was slightly tender and descended upon respiration. The liver edge was just felt upon deep inspiration. The blood pressure was 130/80.

The temperature was 98°, the pulse 62. The respirations were 20.

Examination of the urine was negative. The blood showed a red cell count of 4,850,000, with a hemoglobin of 90 per cent. The white cell count was 9600, 70 per cent polymorphonuclears. A smear was not remarkable. Platelets were plentiful. Several stool examinations all showed positive guaiac tests. A Hinton test was negative. Gastric analysis after fasting showed 100 centimeters of dark brown, turbid, slightly mucoid fluid containing many brown shreds. The guaiac test was positive. The free acid was 24° and the total acid 51°. After one-half hour 120 centimeters of fluid was removed which also showed a positive guaiac. There were 54° free acid and 60° total acid.

X-ray examination of the stomach showed a large crater about five centimeters in diameter on the posterior wall of the stomach. The distal margin of the lesion was about three and a half centimeters before the pylorus. The crater had a slightly irregular margin and showed marked infiltration around it, particularly at its proximal margin.

He was transferred to the Surgical Service for operation.

DIFFERENTIAL DIAGNOSIS

DR. GEORGE A. LELAND: In reviewing the case, it appears that we are dealing with a young man who at the age of eighteen or nineteen years began to have comparatively severe indigestion. His predominating symptom was epigastric pain of the gnawing variety that came on not immediately after meals but some time later. That would suggest ulcer pain perhaps of the duodenum rather than of the stomach. Not only was the pain suggestive of ulcer pain but it was related to food, and later when he went to a physician he found that a cracker and milk diet was absolutely helpful to him. There was no jaundice connected with the story and the pain was not suggestive of cholecystitis or cholelithiasis. Soon after he went to his doctor he became constipated, and the constipation seemed to persist as a very prominent feature throughout the history. It is very unusual for a twenty-two year old man to have constipation lasting for a week at a time. Constipation without intermittent attacks of diarrhea or discharge of mucus from the rectum I think may not be considered too seriously as pointing toward any lesion of the large colon. I am thinking of a malignant lesion of the large colon of course. The age does not rule that possibility out. Constipation is so frequently associated with gastrointestinal indigestion of any source, and particularly with ulcer, that we can assume that the constipation in this case was associated with the lesion that gave him pain and presumably was some form of ulcer. At no time did he

have vomiting and that indicates apparently that the pylorus at no time was sufficiently constricted either functionally or anatomically to cause vomiting.

The family and social histories are non-contributory.

There is no mention made of his weight; whether there was any loss. In view of the fact that the next line tells us that he did soldering and was exposed to lead, which is a minute detail, we have a right to think there was no weight loss or it would have been mentioned. Is this exposure to lead significant? He had pain and was exposed to lead. That is something to think about. The pain which is connected with lead poisoning I think is not ordinarily relieved by food in such a striking way. We can just keep lead on the shelf for a few minutes.

The physical examination was essentially negative except for three points. He had carious teeth—and there again we speak about the teeth, but not the alveolar mucous membrane. Therefore we can assume that there was no lead line, and that is another point against lead poisoning I believe. The other point was that he was tanned, well developed and nourished, and apparently in general good health except for the finding in the epigastrium of a cylindrical mass which was slightly tender and descended on respiration. We can assume from this that it was perhaps slightly movable. The liver edge was palpable. A cylindrical mass in the epigastrium makes one think first of a stomach lesion, a tumor of the stomach rather than ulcer. I have never seen an ulcer of the stomach that I could palpate. I had two cases this past summer where everything in the history, the physical examination, the laboratory studies, and the x-ray pointed to ulcer of the stomach; both were palpable and both turned out to be cancer of the stomach.

In regard to other possibilities, he may have had an enlarged aberrant gall bladder that wandered over to the epigastrium. A spleen might come across. A lesion of the pancreas, a cyst, would be described I think as being low in the epigastrium and perhaps more transverse. I think we have to conclude that this mass is probably in the stomach. The palpable liver edge may or may not be significant.

When we come to the laboratory studies we find that he had a very excellent blood picture. His urine was all right. The smear was not remarkable. I think that rules out any stippling and with it any possibility of the association of lead in this case. The stool examination and gastric analysis showed positive guaiac. That brings the lesion home to the stomach. If anyone suspects that this patient might have had syphilis of the stomach, it is taken care of by the negative Hinton test. I believe practically without exception all the gastric manifestations of syphilis have positive serological tests. He has an acidity which is present with his fasting contents and subsequent meal. This finding certainly goes with ulcer rather than with cancer. On the other hand it does not rule out the possibility of cancer, because not infrequently we find normal and even slightly elevated gastric acidity.

X-ray Interpretation

Dr. Richard Schatzki: X-ray examination showed that the upper half of the stomach was practically normal. In the region of the antrum there was a large crater localized on the posterior wall of the stomach in this region. The stomach distal to this lesion appeared to be normal. We have here two pictures of the same region with the patient slightly rotated and you can see the big crater with a fluid level in it on the posterior wall of the stomach. It was unusually large but had the definite appearance of a big ulcer crater. There was something which made us think that it was not just an ulcer crater, that was the irregular infiltration around this crater which was particularly seen on the upper margin. We felt sure that this was a big ulcer on the posterior wall of the stomach, but in the presence of these changes around the ulcer, malignancy should be considered as the outcome of primary benign ulcer.

Differential Diagnosis Continued

Dr. Leland: In the routine report here, it is mentioned that the crater of this ulcer was 5 centimeters. That is two inches. I have never seen a benign ulcer with a crater so large as that. Accordingly, for the diagnosis, we believe that certainly this patient has a lesion of the stomach which very possibly started as ulcer but is now cancer. We base the conclusion of cancer on the large crater and the fact that the mass is palpable.

We hope that the surgeon who is going to operate on him will find the case operable. We would expect the stomach to be resectable as far as the local condition was concerned and we hope it would not be inoperable because of metastases in the liver or elsewhere.

Clinical Discussion

Dr. Chester M. Jones: We felt that since this patient had a palpable mass it should be considered cancer and should be operated on regardless of any other finding. The mass was definite and the x-ray gave a definite picture that bore out that impression. The fact that he was twenty years old made no difference in diagnosis in this instance. I feel that no matter whether you have an ulcer story or not, if you have a palpable mass the diagnosis should

be that of a malignant lesion rather than ulcer.

DR. LELAND S. MCKITTRICK: Disregarding his age, the history and the gastric analysis, here was a man who had a palpable tumor in the epigastrium. This we felt was cancer until we proved otherwise. I operated on him. He had a large infiltrating lesion in the pyloric end of the stomach which was adherent to the capsule of the pancreas with a little outcropping at one portion near the greater curvature with none of the pale, frosted appearance that one ordinarily associates with cancer. There was a chain of several glands in the gastrocolic omentum, one 2 centimeters in diameter, but all rather elastic and not hard. The liver was entirely negative. I did not know whether he had a cancer or a lymphosarcoma of the stomach. We took a piece of the outcropping off thinking it would give a definite pathologic diagnosis and because frozen section reports on glands are not always satisfactory. We did a partial gastrectomy and posterior Polya. The spleen was not enlarged.

DR. TRACY B. MALLORY: Dr. Schatzki, have you anything to add?

DR. SCHATZKI: The astonishing thing was the prepyloric region. The operation showed that the lesion involved not only the region of the crater but also the whole prepyloric region. We had thought this region was normal and thought we saw peristalsis going over the area, and we could find no definite defect on the films after we reëxamined them. I think that the big lesion in the region of the crater attracted all of our attention in order to decide whether it was cancer or ulcer. Otherwise we should have seen some rigidity in the prepyloric region.

PRE-OPERATIVE DIAGNOSES

Gastric ulcer.
? malignancy.

DR. LELAND'S DIAGNOSIS

Carcinoma of the stomach.

PATHOLOGIC DIAGNOSIS

Lymphosarcoma of the stomach.

PATHOLOGIC DISCUSSION

DR. MALLORY: The section from the tumor mass confirmed the diagnosis of lymphosarcoma. This is a hastily prepared photomicrograph. Here are Brunner's glands at the edge of the pylorus. Here is an immense area of infiltration entirely composed of immature lymphocytes. At one point the infiltration extends upward to the mucosa. Elsewhere there are normal glands over the lesion in contrast to carcinoma where almost invariably a fairly extensive area of mucosa is involved before you get infiltration of the deeper layers. The infiltration extends down between the muscle bundles and here it is out in the serosa. I think Dr. McKittrick was wise in selecting for biopsy a piece of the tumor itself rather than one of the lymph nodes. One ordinarily thinks of diseases of the lymphatic system as diffusely involving a large proportion of the lymphatic tissues simultaneously. This, however, is not true of the specific variety known as lymphosarcoma, particularly lymphosarcoma of the stomach. In a number of cases with very extensive lesions in the stomach the glands of the immediate region, even when enlarged, have shown simple inflammatory hyperplasia and no trace of lymphoma. In all probability we would have been quite unable to make the diagnosis from the gland, whereas it was easy to do from the lesion itself.

The other point of interest is the matter of treatment. In general, surgery is not the method of choice in dealing with lymphoma. But so far as lymphosarcoma of the stomach is concerned there are on record a significant number of well-reported cases from reliable observers of long cures running over five years achieved by resection. I think Dr. Holmes feels that the x-ray treatment of an ulcerating lesion in a hollow viscus, even if lymphoma, is somewhat dangerous.

DR. HOLMES: I agree entirely with what Dr. Mallory has said, that the treatment for lymphosarcoma of any hollow viscus is surgery followed by radiation. If you use radiation first you may get rapid breaking down of the tissue with perforation of the viscus. That has happened once to my knowledge, but I have no doubt that the treatment can be given safely without the preliminary operation.

May I say a word in regard to the diagnosis? A fact that should have made us suspicious in this case was the age of the patient. Cancer of the stomach is not unknown at this age, but a lesion in the stomach which resembles cancer in a person below the usual cancer age should always lead one to suspect lymphoma. There were no characteristic findings in this case. The diagnostic findings by x-ray in lymphoblastoma are marked enlargement of the rugae in the remaining portion of the stomach and a multiple lesion, neither of which this patient had.

A PHYSICIAN: Was there anything about the appearance of the stomach to suggest the appearance of the crater and the fluid level in the crater?

DR. MALLORY: There was a huge ulcer, which is quite characteristic of lymphosarcoma in the stomach.

In answer to Dr. Leland, I have seen benign ulcers as large as 10 centimeters. They can be of any size. It is extremely unusual, however, and huge ulcers usually turn out to be one form of malignancy or another.

A PHYSICIAN: Do you think this had been going on two or three years?

DR. MALLORY: I do not think it is possible to say. I should think not, however. It seems

to me that a large proportion of gastric lesions can very logically be connected up with an initial chronic gastritis. We are proving in many places all over the world that a chronic gastritis precedes ulcer. It is a common observation that it precedes atrophic gastritis in pernicious anemia, and it is also commonly associated with cancer. I do not see why it is not reasonable to assume that it may precede lymphosarcoma. An extensive area of lymphocytic infiltration and chronic inflammation should be an excellent starting point for a malignant neoplasm.

CASE 20472

Presentation of Case

A sixty year old English chauffeur entered complaining of abdominal pain of two weeks' duration.

Two weeks before entry, six hours following a dose of castor oil taken because of a somewhat heavy feeling in his abdomen, he developed cramps in the lower abdomen. These grew worse and radiated all over the abdomen, most marked in the epigastrium. He did not feel nauseated and vomited only once that evening after taking a glass of milk. He had two or three liquid stools without blood or mucus that evening. Since that episode he had a constant burning pain in the epigastrium with occasional radiation down and toward the flank, but never to the back, shoulders or arms. One week before entry he noticed for the first time about a half teaspoonful of bright red blood in his stool. Since then blood was present with every bowel movement, varying in quantity from a teaspoonful to mere staining. On several occasions there was also some mucus. During the past two weeks he had one bowel movement each day. There was no tenesmus or low back pain. The abdominal pain was usually present a few hours after meals. He did not notice the effect of food or milk upon the pain but found that certain pills relieved it. His physician put him on a diet of cereals, soups, milk, potatoes and scraped meat. On one occasion three days before entry he was short of breath for a few minutes but had no pain. There was no loss in weight.

His family and marital histories are noncontributory.

He had typhoid fever during his childhood. Twenty-six years before entry he had an operation for a Dupuytren's contraction. For about two months during the past year he had some trouble in starting the urinary stream. He had nocturia one or two times.

Physical examination showed a well-developed and nourished man walking about in no distress. Examination of the chest was negative. The abdomen was full and rounded. There were no masses or foci of tenderness. By rectal examination with the tip of the examining finger a moderately firm non-tender mass was felt projecting from the posterior rectal wall but not filling the lumen. The rectal mucosa did not feel fixed or indurated. The prostate was large, smooth and symmetrical. The blood pressure was 155/100.

The temperature was 98°, the pulse 80. The respirations were 25.

Laboratory examination of the urine was negative except that the test for sugar was green with a yellow precipitate. One stool examination showed a two plus guaiac. The stools were dark brown, soft and formed. A stool on the third day was watery, yellow brown in color and showed a negative guaiac. Examination of the blood showed a red cell count of 5,370,000, with a hemoglobin of 80 per cent, and a white cell count of 14,000, with 51 per cent polymorphonuclears. The non-protein nitrogen of the blood was 29 milligrams. The blood sugar was 106 milligrams. A phenolsulphonephthalein test showed 60 per cent excretion in two hours. A Hinton test was negative.

Following a proctoscopy an exploratory laparotomy was performed on the third day. Following the operation he had some diarrhea. On the eleventh day he developed frequency with considerable burning. The urine was full of red blood cells and white blood cells. He was put on constant drainage with frequent bladder irrigations. His chart remained fairly flat throughout his whole course. He had complete urinary retention and had to be on constant drainage. On the sixteenth postoperative day he complained of slight burning in the epigastrium. This was relieved by soda. He vomited thick brown fecal material. Stomach lavage was done and a large amount of this same material was obtained. On the afternoon of the nineteenth postoperative day while sitting in a chair beside his bed he suddenly had an attack of dyspnea without pain and felt very weak. He got into bed but continued to be dyspneic and cyanotic. His pulse was strong. In two or three minutes he was breathing easier and his color improved. He then complained only of feeling weak. Two to three minutes later he had a sudden attack of severe pain in the left side of his chest, his color became almost black, and his breath came in gasps. In three minutes he was dead.

Differential Diagnosis

Dr. F. Dennette Adams: Abdominal discomfort of any kind, developing in a patient of this age, who had previously been quite well, calls for investigation, unless the symptoms promptly clear up with the aid of a few simple medical measures. Bleeding from the rectum is a sign of mischief even more important

and should never be dismissed without every effort being made to determine its cause. In any case of rectal bleeding, no matter what the age or the nature of the accompanying symptoms may be, it is always dangerous to be content with a diagnosis of hemorrhoids without definite proof of their existence or without excluding a variety of serious conditions, particularly cancer of the bowel, a common disease, and one of the commonest causes of bleeding in younger patients, as well as in older ones. It should always be considered and excluded if possible.

Here is a man who suddenly developed abdominal discomfort, cramps and bloody movements. One cannot make a diagnosis on these facts, but they are sufficient to make one very wary of some serious bowel condition, most likely cancer. If increasing constipation or diarrhea, not accounted for by the castor oil, were present we should be more suspicious of cancer; but these are not always present, for obstruction may be a late manifestation. The physician who sent this man into the hospital for study within such a short time after the onset of symptoms used excellent judgment.

"On one occasion three days before entry he was short of breath for a few minutes, but had no pain." In a man of sixty this is suggestive of mild angina, but the evidence is inconclusive.

"Nocturia one or two times" may indicate beginning prostatic block. It may mean nothing.

The fact that he was well developed and nourished does not exclude bowel cancer. The negative chest findings are surprising. One would at least expect a systolic murmur at the base, and possibly at the apex, in a man of sixty, with probable arteriosclerosis and a blood pressure of 155/100. But this is of only relative importance. The palpable mass by rectum is most likely cancer. The large prostate probably explains the nocturia. The laboratory tests constitute little of importance. If all the stools had shown negative guaiacs, the history would be sufficient to demand investigation. The slight amount of sugar in the urine and the slight increase in blood sugar doubtless indicate very mild arteriosclerotic diabetes, readily controllable by diet.

The history and physical examination are so characteristic that I feel certain a cancer of the large bowel was found at operation.

Dr. Tracy B. Mallory: The following was done at operation: "The abdomen was opened through a left paramedian incision. Examination showed the liver to be full of metastatic nodules of carcinoma. There was an area of induration behind the sigmoid which suggested the possibility of a second lesion here, but the primary source was finally demonstrated in the transverse colon, where a large indurated mass involving the mesentery and omentum could be palpated. Inasmuch as the man had so little obstruction it was decided not to do anything for bowel drainage at this operation. Routine appendectomy was done."

Dr. Adams: Incidentally, when non-removable cancer of the bowel is found at operation a great deal of discomfort can sometimes be relieved by making a short circuit around the tumor if obstruction is found.

"The urine was full of red blood cells and white blood cells." Nothing is said about bacteria. Cystitis probably developed. One would think in terms of ulceration of tumor into the bladder. A straight extension without infection would have given red cells but one fails to see how that would account for white cells. Secondary infection in a partially obstructed bladder, based on prostatic block, with or without catheterization following operation, would be even more likely.

"He vomited thick brown fecal material." That sounds like obstruction despite the absence of cramps. A dilated stomach following operation would hardly give fecal material, nor would it be apt to occur as late as the sixteenth day. It is late for peritonitis, too, unless perforation has occurred.

"He suddenly had an attack of dyspnea without pain and felt weak." It is at the right time and this is the correct history for pulmonary embolism. One is suspicious of his heart because of the one previous attack of dyspnea, but there has been no cardiac pain, and patients who die of coronary disease do not turn black. An episode of this type occurring on the nineteenth day and with the patient sitting in a chair—probably his second or third day out of bed—is typical of pulmonary embolism. I believe Dr. Mallory will tell us that this was the immediate cause of death.

Clinical Diagnoses

Carcinoma of rectum and transverse colon with metastases to liver.
Gastrocolic fistula.
Hypertrophy of prostate.

Dr. Adams' Diagnoses

Carcinoma of rectum with metastases to liver and colon.
Intestinal obstruction.
Hypertrophy of prostate with cystitis.
Pulmonary embolism.

Anatomic Diagnoses

Colloid adenocarcinoma of transverse colon with metastases to the liver.
Carcinoma of rectum.
Intestinal obstruction.
Operative wound: Exploratory laparotomy.
Rectal polyps, adenomatous.
Pulmonary embolism.

Pulmonary infarction.
Arteriosclerosis, moderate, aortic and renal.
Cholesterosis of gall bladder.
Prostatic hyperplasia.
Duodenal ulcer, healed.

Pathologic Discussion

Dr. Mallory: The terminal event was a large pulmonary embolus. The one point in question on the diagnosis was the location of his primary tumor. At the operation Dr. Allen found two tumor masses. He decided that the larger tumor in the transverse colon was probably primary and that the lesion in the rectum was a metastasis. Of course the posterior culdesac behind the uterus in the female and behind the prostate in the male is the commonest focus for intraperitoneal metastatic neoplasm. The cancer cells work down into this culdesac and become implanted. The question of whether to operate on cancer of the stomach can often be settled by a rectal examination. Dr. Allen's assumption was a perfectly reasonable one, but it was incorrect. The man had two primary cancers, one in the transverse colon and one in the rectum, and also two or three benign polyps in the rectum. There can be little doubt in this case that both cancers developed from polyps originally benign. That is one of the factors which enters very largely into the prognosis of surgical treatment in these large bowel tumors. One hesitates to be too radical in one's treatment of benign tumors, yet, if a benign tumor is left behind, the possibility of a fresh malignant lesion is considerable.

Dr. Adams: Did this man have ulceration of the tumor into his bladder?

Dr. Mallory: No. He had a hypertrophied prostate and a cystitis developed behind the obstruction.

A Physician: What possibility would there be of an embolus getting into the portal system?

Dr. Mallory: We practically never see massive embolism in the portal system. We see progressive thrombosis in the face of an infectious process such as acute appendicitis, in which some of the organisms get into the vein and set up a thrombotic process. Minute bacterial emboli undoubtedly are occasionally swept to the liver but the current of blood in the portal vein is extremely slow, pressure is very low and we do not get emboli in the sense of large clots of blood that jump from one spot to another.

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MEDICAL SCHOOLS AND STATE BOARDS

THE statement has been made publicly on several occasions that the formal standards for medical practice in Massachusetts are lower than they are in any other state. This statement is usually received with incredulity as the boast is made that Massachusetts is a leader in legislation to protect the people. However, since Massachusetts is actually a laughing stock among the states on account of some of the provisions or lack of provisions of its medical practice act, it may be interesting to consider the basis for the laughter by a comparison of the statutes of the various jurisdictions in the United States.

Therefore the statutes have been reviewed from this point of view, yet such review does not at first glance reveal any startling element in the laws that shows a high standard of education elsewhere. The striking feature is that the standards are often set at the discretion of some state authority, generally the Board of Registration in Medicine, and are not fixed by statute.

There is considerable variety in the terms used by the different statutes to characterize the schools from which graduates will be accepted, beyond the basic requirements that the candidate shall be a graduate of a school legally chartered and empowered to confer degrees in medicine, and give a course of certain length. The statutes of the states were adopted at different times, under different circumstances, and represent various attempts to deal with problems essentially the same but varying in details of circumstance. It will be convenient to note the characterizations in order, sometimes with brief comment.

The term "adequate" is used in the Alabama statute only: "adequate number of full time teachers", "adequate laboratory facilities", "serviceable library and museum, which are—accessible", "sufficient hospital and dispensary material conveniently located".

Only four statutes explicitly accept the standards of the Council on Medical Education of the American Medical Association, Virginia adding that the school must be "satisfactory to the State Board of Education". Hawaii, Kansas and West Virginia specify that the school must be Class A according to the standards of the Council of Education of the American Medical Association.

The words "the Board shall approve" or "approved by the Board" are used by California, Colorado, District of Columbia, Iowa, Maine, Michigan and the Canal Zone.

The standards set by the Association of American Medical Colleges are specified as the standards of the following jurisdictions: Arizona, Maryland, Nevada, Oklahoma, Washington and Alaska.

Indiana is unique in empowering its Board to keep its requirements "up to the average standard of medical education in other states".

Acceptable medical schools shall have the standards of "the better class of medical schools in the United States" for Arkansas; and Texas states that schools shall be "reputable" meaning "as high as—the better class of medical schools of the United States".

The Oregon board has "full power and authority to make any rule which it deems necessary to bring the standard of requirements for a license to practice medicine and surgery in this state, up to such standards in other states".

In Puerto Rico "the Board—if it deems it advisable, may on preparing the registers of accredited schools be guided by the classification adopted by the Boards of Examination of the states—with which it maintains relation of reciprocity".

The term "good standing" is the one most frequently used, often adding "with the Board" or "as determined by the Board": Georgia,

Louisiana, Montana, Nebraska, New Jersey, New Mexico, North Carolina, Ohio, Rhode Island and Utah.

In South Carolina the candidate must have "such preliminary, and medical education as may be prescribed by the board".

In Connecticut the school must be "reputable" meaning "recognized as legal and reputable" by the medical society. In Minnesota, Vermont, and Wyoming, recognition is by the Board.

In South Dakota, the school must be "recognized, reputable and approved".

The term "reputable" is used in Kentucky, Mississippi, Missouri, North Dakota and Wisconsin, either with no qualification or only with specification as to length of course of study.

Illinois and the Philippine Islands require that the school shall be "reputable and in good standing"; Pennsylvania and Tennessee "reputable and recognized"; and Florida, New Hampshire and New York, that it be "satisfactory".

Massachusetts, then, requires nothing beyond the legal chartering of the school to confer degrees in medicine and the prescribed length of medical course. As to content of the curriculum and qualifications of the school to give modern medical education and quality of education actually given, Massachusetts makes no requirements and by the same token implies that it takes no interest.

In many states the statute provides some minimum requirement so that degradation below that level is not possible, authorizing higher requirements if the Board sees fit. Although a number of states have no minimum statutory standard, and may therefore sink as low as Massachusetts, none care to do so.

The latest legislation is that of Colorado in 1927, and the District of Columbia in 1929, and in this legislation the words "approved by the board" or "the board shall approve" are employed. Massachusetts is now seven years behind the last of the other states: this ought to satisfy the most backward person in Massachusetts.

ACCIDENT AND HEALTH INSURANCE

INFORMATION has been submitted to the *Journal* that members of the Massachusetts Medical Society have received circulars soliciting business in the fields of accident and health insurance.

A company which conducts its business through the mail is trying to sell a policy which is noncancelable for the term for which it is written, only at the option of the company, and is renewable only at the option of the company with the added proviso that premiums are subject to change from time to time.

Several of the mail order type of insurance companies have no license to do business in Massachusetts and hence are not under official supervision of this State.

The report of one company to the Insurance Department of the State granting the license shows, as of December, 1933, total assets of $6563 with total liabilities of $1039. Any person doing business with a company of this size cannot have that assurance of stability which is desirable, especially since any suit for collection of the terms of a policy must be filed in the state which issues the license.

Accident and health insurance policies in general are the most elusive forms of protection in their respective fields unless issued by companies of recognized standing. The common slogan of "Before investing, investigate" is especially pertinent in buying insurance, and experience shows that buying a health and accident insurance policy may, not rarely, mean buying trouble more than protection.

Better buy insurance in a company licensed in your own state, and even then get as much information as is available from the Insurance Department.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

BRANCH, CHARLES D. A.B., M.D. University of Michigan Medical School 1931. Formerly: Surgical Interne, Lakeside Hospital, Cleveland, Ohio; Assistant Resident Surgeon, Peter Bent Brigham Hospital. Now: Arthur Tracy Cabot Fellow in Surgery, Harvard Medical School. His subject is "Incisional Hernia. Analysis of Three Hundred Cases." Page 949. Address: 25 Shattuck Street, Boston, Mass.

BAIRD, PERRY C. B.A., M.D. Harvard University Medical School 1928. Formerly: Resident Physician, Massachusetts General Hospital, and Rotary Interne, University of Michigan Hospital. Now: In Charge of Dermatological Clinic, Newton Hospital, Newton, Massachusetts. Address: 416 Marlboro Street, Boston, Massachusetts. Associated with him is

LINGLEY, J. R. M.A., M.D. Harvard University Medical School 1928. Assistant Roentgenologist, Massachusetts General and Worcester Memorial Hospitals. Roentgenologist, McLean Hospital and Norfolk Prison. Address: 60 Lewis Road, Belmont, Massachusetts. And

PALMER, ROBERT S. A.B., M.D. Harvard University Medical School 1925. Assistant in Medicine, Massachusetts General Hospital. Instructor in Medicine, Harvard Medical School. Address: 330 Dartmouth Street, Boston, Massachusetts. Their subject is "The Failure of

Roentgen-Ray Therapy of Pituitary and Adrenals in Essential Hypertension." Page 952.

ROWE, ALLAN WINTER. S.B., S.M., A.M., Ph.D. Director of Research, Evans Memorial, Massachusetts Memorial Hospitals. Professor of Chemistry, Boston University School of Medicine. His subject is "Vital Function Studies: XII. Analysis of a Group of Children with Impaired Hearing." Page 954. Address: 80 East Concord Street, Boston, Massachusetts.

DOWNING, JOHN GODWIN. A.B., M.D. Harvard University Medical School 1915. Assistant Professor in Dermatology, Tufts College Medical School. Assistant Dermatologist, Boston City Hospital. Dermatologist, St. Elizabeth's Hospital. Address: 520 Commonwealth Avenue, Boston, Massachusetts. Associated with him is

COUSINS, S. M. M.A. Research Assistant to Dr. Downing. Address: Biological Laboratory, Harvard University, Cambridge, Massachusetts. Their subject is "Exhibit of Fungi Pathogenic to Man Shown at the One Hundred and Fifty-Third Anniversary of the Massachusetts Medical Society." Page 963.

PATTERSON, DANIEL C. M.D. University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore. F.A.C.S. Attending Surgeon, Bridgeport Hospital. His subject is "Hugh Owen Thomas. The Man and His Work." Page 971. Address: 881 Lafayette Street, Bridgeport, Connecticut.

MISCELLANY

HOME NURSING SERVICE AND SPECIFIC THERAPY FOR LOBAR PNEUMONIA CASES

Lobar pneumonia, the most serious of all acute infectious diseases, is the seventh leading cause of death in Boston. Clinical experience indicates that the best chances of recovery obtain among pneumonia patients who receive prompt medical and nursing care. The Pneumonia Committee of the Boston Health League is anxious that patients with lobar pneumonia receive adequate medical and nursing care as early as possible, and calls the attention of practicing physicians to the fact that nursing service on a visit basis is available for any patient who does not need or who cannot afford a special nurse. The Community Health Association will visit any patient at the request of a physician, and nursing care is given only on the order of an attending physician.

Practicing physicians in Boston are asked to coöperate by reporting all pneumonia cases to the City Health Department promptly.

The investigation conducted by the State Department of Health of Massachusetts in certain areas during the past four years indicates that the mortality from Type I and Type II pneumococcus pneumonia is reduced by the use of specific therapy. Concentrated anti-pneumococcic serum will be available to physicians provided that

1. Sputum or other material from the patient is first typed and found to contain Type I or Type II pneumococci.
2. The physician certifies that the patient has not been ill with pneumonia longer than four days (96 hours).
3. As soon as the patient is discharged, a record form furnished by the Massachusetts Department of Public Health is filled out and sent to the Field Director, Pneumonia Study and Service, State House, Boston.

Typing can be done at any time at the State Bacteriological Laboratory, Room 527, State House. The Community Health Association will be glad to coöperate by sending the specimen to the laboratory for the physician. Specimens sent for typing during the night or on holidays should be left with the State House guard. Serum can be obtained from this laboratory, if the above conditions are fulfilled.

For any further information, please communicate with the Boston Health League, 43 Tremont Street: Lafayette 6566.

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MARGARET H. TRACY, *Secretary*,

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS for OCTOBER, 1934

Diphtheria—So far in 1934 we have had fewer cases of diphtheria than we might have expected for any one month in 1930.

Typhoid fever is headed toward a new low prevalence for the year.

The scarlet fever record is lower than at any time since 1930 with evidence of some localization around Worcester.

Epidemic cerebrospinal meningitis continues to show nothing remarkable in this or neighboring states, with a slight increase noticeable in Illinois.

Measles is being reported in remarkably low figures.

Pulmonary tuberculosis, while showing an increase in reported morbidity, continues to give evidence of having a low fatality rate for the year.

Anterior poliomyelitis, lobar pneumonia, whooping cough, mumps, and tuberculosis other forms show nothing remarkable.

Chicken pox and German measles are being reported in slightly increased figures.

RARE DISEASES

Anterior poliomyelitis was reported from Andover, 1; Boston, 1; Everett, 1; Holden, 1; Holyoke, 1; Lawrence, 1; Southbridge, 1; Wakefield, 1; Worcester, 2; total, 10.

Dysentery (amebic) was reported from Lancaster, 1.

Dysentery (bacillary) was reported from Boston, 3; Everett, 1; Lexington, 1; Northampton, 6; total, 11.

Encephalitis lethargica was reported from Boston, 1.

Malaria was reported from Boston, 1; Woburn, 1; total, 2.

Epidemic cerebrospinal meningitis was reported from Boston, 2; Fall River, 1; Holyoke, 1; Salem, 1; total, 5.

Pellagra was reported from Lowell, 1; New Bedford, 1; total, 2.

Septic sore throat was reported from Boston, 6; Lowell, 1; Mansfield, 1; Medford, 1; Somerville, 1; Watertown, 4; Woburn, 1; Worcester, 2; total, 17.

Trachoma was reported from Boston, 1; Haverhill, 1; total, 2.

Trichinosis was reported from Boston, 1.

Paratyphoid fever was reported from Cambridge, 1; Cohasset, 1; total, 2.

Undulant fever was reported from Lynnfield, 1; Pittsfield, 1; total, 2.

MONTHLY REPORT FOR OCTOBER, 1934

Disease	Oct., 1934	Oct., 1933	Average*
Anterior Poliomyelitis	10	23	92
Chicken Pox	377	280	364
Diphtheria	70	107	229
Dog Bite	701	457	415
Epidemic Cerebrospinal Meningitis	5	2	7
German Measles	44	12	28
Gonorrhea	626	670	593
Lobar Pneumonia	181	201	212
Measles	91	259	253
Mumps	98	163	198
Scarlet Fever	481	513	598
Syphilis	404	367	322
Tuberculosis Pulmonary	321	255	327
Tuberculosis Other Forms	40	40	41
Typhoid Fever	15	19	31
Undulant Fever	2	0	
Whooping Cough	411	671	406

*Based on figures for the preceding five years.

CORRESPONDENCE

MEDICAL ECONOMICS

Editor, *New England Journal of Medicine*,

I had the pleasure of listening to Sydney Lamb, Secretary of the Merseyside Hospital Council, Liverpool, England, and enjoyed reading his address which was printed in the *New England Journal of Medicine* of November 1, 1934. I am sure that the majority of physicians would be glad and willing to have some plan similar to that described by Mr. Lamb adopted in this country.

Now let us consider the problem of Organized Medicine as designed to enable the physician to make a living or at least be able to pay his rent.

The NRA has embarrassed the medical profession and it is time that we should wake up from our lethargy.

The legal profession has not been deceived under the guise of "patriotism" or "emergency" into rendering legal services for the relief dictators at reduced rates. Their fees, mileages, per diems, court costs, etc., are being paid in full without any emotional exhibitions. The grocers and others who furnish supplies to the families on the relief lists are also being paid in full.

Why are the hospital trustees and superintendents afraid to stand up for their rights for fear that the people will desert them if they do not dispense free services far and wide? Is it fair to the medical profession to force such tactics on the rank and file? Doesn't this kind of a practice take everything away from the general practitioner? That is no way to deal with the situation. We should do our best to help our colleagues make a living. You will all agree with me, that we are the most charitable of the professions and we have been and still are willing to give our services to those who are absolutely indigent; but too much advantage is being taken of general practitioners by the hospitals and those supposed to be indigent.

If some of the money now being spent by the relief boards for wholly unnecessary clerks, investigators, administrators, aids and other hangers-on, who now number about one to every four on relief, were given to the physicians who are doing the real and necessary work, there might be a gleam of sense and justice in the whole thing.

Wake up from your deep slumber, unite as one, be all for one and one for all; put aside hatred and jealousy, and by so doing, the medical profession will flourish and the average general practitioner will at least be able to earn a living. We need the aid of all, and the Massachusetts Medical Society especially.

BERNARD ZUCKERMAN, M.D.
1011A Blue Hill Avenue,
Dorchester, Mass.,
November 3, 1934.

VENEREAL DISEASE INFORMATION

Treasury Department
Public Health Service
Washington

October 31, 1934.

Dr. W. L. Burrage, Secretary,
Massachusetts Medical Society,
Brookline, Mass.

Dear Doctor:

About a year ago you were requested to bring to the attention of the members of your medical society a monthly publication of the Public Health Service

known as "Venereal Disease Information." We are sure that both you and the members of your society are greatly interested in the program for the control of syphilis and gonorrhea. These two diseases are among the most prevalent of all communicable diseases, and it is essential that health authorities have the active assistance and support of all of the physicians of the country. With this idea in mind, it is desired to request that you again bring to the attention of the physicians of your society the easy method which "Venereal Disease Information" provides them in keeping abreast of modern advances in venereal disease work.

In the editing of "Venereal Disease Information" every effort is exerted to make it easily readable and the abstracts sufficiently brief so that the physician doing private practice will find time to use it. It is primarily an abstract journal containing the summaries of articles on the venereal diseases which appear in 350 of the medical journals of the world. The subscription price is extremely nominal, being only fifty cents per annum, payable by check, money order, or cash (but not stamps), to the Superintendent of Documents, Government Printing Office, Washington, D. C. Should you find it more convenient, however, to take subscriptions at your next meeting, the name and address of each member who desires to subscribe may be listed upon the attached form and forwarded together with fifty cents for each annual subscription.

The coöperation of you and your members in this important matter will be greatly appreciated and your action a direct contribution to the campaign now being waged against these diseases.

By direction of the Surgeon General.

Respectfully,

JOHN MCMULLEN, *Assistant Surgeon General,*
Division of Venereal Diseases.

NOTE: A blank for subscriptions is on file at the *Journal* office.

LIVER THERAPY IN ANEMIA

EARLY USE OF LIVER IN ANEMIA (PRIORITY)

Editor, *New England Journal of Medicine,*

Of interest to hematologists, investigators, and authors, concerned with the study and treatment of the anemias with liver and liver extract, will be the following references:

Galen (130-200 A.D.) — Galeni operum Quartus Tomus Eaquae Ab Ipso De Morborum, Basileae, 1549. CL. Galenide Affectorum Locorum Notitia, Guilielmo Copo Basiliensi interprete: "De Locis Affectis," Liber Quintus, P. 130, 1st column, lines 13-16— "Quippe nisi *hepar* afficiatur, haudquaquan fieri potest huiusmodi affectus: non tamen semper ob primariam eius affectionem excitatur, quamuis hoc sit quam frequentissimum. Etenim quia ipsum, eius facultatis, quae sanguinem gignit instrumentum, est, consequens est, ut uitiato hoc uiscere, actio quoque eius uitietur."

Galen: Epitome Galeni Pergameni Operum, in Quatuor Partes Digesta, Pulcherrima Methodo Universam illius uiri doctrinam complectens. Basileae, 1511, Apud Mich. Isingrinium. "De Locis Affectis," Lib. V, Caput VI, P. 766, Second column, lines 3-6: "*Hepar est sanguificationis principium*" — "Etenim quia hepar facultatis sanguificatricis est instrumentum: Consequens est, ut ipso uitiato actio quoque eius uitietur.

Galen: Galeni Pergameni — De Usu Partium, Liber IV, P. 221, lines 18-20, 1551, Basileae, M. Isingrinium — "*Hepatis caro primum sanguificationis organum venaruq., principium*": "Est autem id, quod ueluti hepatis caro existit, primum sanguinis gignendi organu, atque uenarum principium." "Quare natura ipsius. Sanguini esse uidet proxima." On Page 217, lines 55-58, in the same book (IV, of De Usu Partium), there is discussed by Galen: "*Hepar inducere sanguini extremu ornatu.*" — Ipsum autem *hepar*, postqua id nutrimentum acceperit, a famulis iam praeparatu, obscuramqae sanguinis speciem referens, inducit ei postremu ornatum. Ad sanguinis exacti generationem.

Galen: Galeni Pergameni — "De Locis Affectis"— Liber V, Caput VII, P. 766, lines 47-50, 1551, Basileae, M. Isingrinium—Galen states: "Cum igitur sanguinis generatio hepatis munus existat, nulla sane' alia causam huiusce generationis dicemus esse, a facultate ipsius uisceris propria."

Galen: "De affectorum locorum notitia"; libri sex. Guilielmo Copo Basileiensi interprets. Parisiis, Stephani, 1513.

It is to be noted, here, that "the liver is the first and all-important thing or substance in making blood. Since the liver is the chief instrument of the blood-making faculty, it follows that if it itself is weakened or diseased, also the action or function of this thing or substance will be vitiated or impaired". Nevertheless, it happens, sometimes, that on account of disorder or disturbance of some portion or of those parts which have connections with the liver itself, either through meseraicas or the vena cava, become slowed or sluggish. Then the veins rising . . ("Accidit tamen interdum, ut ob intemperiem alicuius particulae, earum quae aut per meseraicas, aut cavam venam, cum illo commerciam habent, ipsum quoque refrigeretur. Porro simarum partium venae, ab ea quae in porta est, exortae, in tenuissimas extremitates finiuntur.")

In the United States and elsewhere, Whipple, Minot, and Murphy's work on liver therapy in anemia, definitely established this form of treatment and has led to the almost universal use of this method.

However, considerable experimental and clinical work with liver in the treatment of anemia has previously been carried on by Professor Pietro Castellino, of the University of Naples, and his associate, Professor Alfonso Pirera (Professore paroggiato di Medicina Interna nella R. Universita di Napoli) many years before the epoch-making contributions

of Whipple, Minot, and Murphy appeared (1920, 1925, 1926).

It is to be regretted that the prior work of Castellino and Pirera was entirely overlooked by our American investigators and authors.

Pirera, Alfonso: Intorno ad alcuni problemi recenti di patologia epatica—Studio Sperimentale—Il Tommasi (Napoli), *7:* No. 26, 601-617, (Sept. 20), 1912, and *7:* No. 27, 625-636 (Sept. 30), 1912.

Castellino, Pietro: "Nuove vedute sulle funzioni del fegato"—Nuova Vita (Torino and Roma, Societa Editrice Nazionale Di Propagande Igienica) III: No. 15, Dec. 12, 1912.

Chilla, Antonio: (Assistant della I Clinica Medica nella R. Universita di Napoli)—Per Una Rivendicazione Italiana—"Sulla ormono-terapia epatica," La Riforma Medica (Napoli) *45:* No. 2, 39-41, (January 12), 1929.

Maragliano, Edoardo Prof.: La Riforma Medica (Napoli) *45:* No. 2, 41-42, (January 12), 1929.

Gosio, R.: (Assistant in Royal Clin. Med. della Univ. di Roma)—"La priorita della scienza italiana nello studio sperimentale e clinico della terapia epatica delle anemie" (Rivendicazioni)—Il Policlinico (Sezione Pratica.) *36:* No. 20, 709-712, (Maggio 20), 1929.

Viola, Rondoni, Zoja: "Esame della priorita, del Prof. Pietro Castellino (senior) nella opoterapia epatica"—La Ricerca Scientifica, IV, No. 7, 413-416, (April 15), 1933, Ministero Dell' Educazione Nagionale, Roma (Consiglio Nazionale Delle Ricerche).

Castellino, Pietro: Dell' emolisi e della difesa anti-emolitica epatica, ecc. Discorsi e Comunicazioni al XXXV Congresso della Soc. di Med. Int., Genova, ottobre 1929; Folia Medica (Napoli)—*16:* No. I, 8-28, (January 15), 1930; Il Policlinico, Sezione Pratica (Roma), *36:* No. 46, 1685-1687, (November 18) 1929. Speaking before the XXXV Congresso di Medicina Interna, at Genoa, on October 24, 1929, Castellino said: "Il silenzio doloroso dei connazionali, aggravata da qualche tentative di plagio, lo ha ratistato profondamente, specie in un ora in cui i valori intellettuali del nostra Paese tanto meritano di esser presi in considerazione. Ed e percio che egli prima di esporre dalla tribuna del Congresso il suo rammarico e di rivendicare giustamente-piu per la dignita del Paese che della sua persona—la priorita dell' epatoterapia ha sentito il bisogno di sottoporre a nuove indagini quelli che furono i risultati delle sue esperienze e che citiamo per sommi capi."

Castellino and Pirera used, experimentally and clinically, liver extract, liver juice, and liver, orally, hypodermically, and intraperitoneally, in 1910-1912. Castellino had knowledge of the value of liver in anemia long before this time. We, in this country, have failed to give these early workers credit for their observations and published views and conclusions!

It is, perhaps, ordinarily, not safe to read into the writings of the past, the knowledge of the present, but in the case above cited, I believe through inadvertence and lack of knowledge of the existence of the above references in the literature, deserving credit has not been given to Castellino, Pirera, and their associates.

HYMAN I. GOLDSTEIN, M.D.
Camden, New Jersey.
November 2, 1934.

RECENT DEATHS

MURPHY — EMILY FRANCES MURPHY, M.D., of 23 Summer Street, Taunton, died November 14, 1934, as the result of injuries caused by a fall a month ago. She received her M.D. degree from the College of Physicians and Surgeons (Boston) in 1892.

She joined the Massachusetts Medical Society in 1895 and retired in 1930.

Dr. Murphy is survived by her widower, Dr. Joseph B. Murphy, and a son, Dr. Joseph L. Murphy.

McCABE — JOHN JOSEPH MCCABE, M.D., of 187 Chestnut Street, Holyoke, died at his home, November 13, 1934. He was educated in the public schools of Holyoke, graduated in medicine from the New York University Medical College in 1893, and joined the Massachusetts Medical Society in 1897. He served as city physician in 1898 and 1899.

His widow, two sons, two daughters and a sister survive him.

The Massachusetts Medical Society

SECOND ANNUAL POSTGRADUATE MEDICAL EXTENSION COURSE

The following sessions have been arranged by the Committee:

Barnstable

Sunday, November 25, at 4:00 P.M., at the Cape Cod Hospital, Hyannis. Subject: Cardiovascular Disease (Second Session). John I. B. Vail, M.D., Chairman.

Berkshire

Thursday, December 6, at 4:30 P.M., at the House of Mercy Hospital, Pittsfield. Subject: Cardiovascular Disease (First Session). Albert C. England, M.D., George S. Reynolds, M.D., Chairmen.

Bristol North (Attleboro Section)

Tuesday, November 27, at 4:00 P.M., at the Sturdy Memorial Hospital, Attleboro. Subject: Nutrition in Health and Disease (First Session). William M. Stobbs, M.D., Chairman.

Bristol North (Taunton Section)

Wednesday, December 5, at 7:30 P.M., at the Morton Hospital, Taunton. Subject: Cardiovascular Disease (First Session). Arthur R. Crandell, M.D., Chairman.

Bristol South (Fall River Section)
Monday, November 26, at 4:00 P.M., at the Stevens Clinic of the Union Hospital, Prospect Street, Fall River. Subject: Endocrinology (First Session). Eugene A. McCarthy, M.D., Sub-Chairman.

Essex North
Tuesday, November 27, at 4:00 P.M., at the Hotel Bartlett, 95 Main Street, Haverhill. Subject: Cardiovascular Disease (Third Session). Francis W. Anthony, M.D., Chairman.

Essex South
Tuesday, November 27, at 4:00 P.M., at the Salem Hospital, Salem. Subject: Endocrinology (Third Session). Walter G. Phippen, M.D., Chairman.

Franklin
Tuesday, November 27, at 8:00 P.M., at the Franklin County Public Hospital, Greenfield. Subject: Surgery (Third Session). Halbert G. Stetson, M.D., Chairman.

Hampden
Thursday, December 6, at 4:00 P.M., at the Academy of Medicine, Professional Building, 20 Maple Street, Springfield, and at 8:00 P.M., at the Holyoke City Hospital, Holyoke. Subject: Surgery (Third Session). George L. Schadt, M.D., Chairman.

Hampshire
Wednesday, December 5, at 4:15 P.M., in the Nurses' Home of the Cooley Dickinson Hospital, Northampton. Subject: Dermatology and Syphilis. Robert B. Brigham, M.D., Chairman.

Middlesex East
Wednesday, November 28, at 4:00 P.M., at the Melrose Hospital, Melrose. Subject: Surgery (Second Session). Joseph H. Fay, M.D., Chairman.

Middlesex North
Friday, November 30, at 7:00 P.M., at the St. John's Hospital, Lowell. Subject: Obstetrics and Gynecology (Second Session). Frederick P. Murphy, M.D., Chairman.

Middlesex South
Monday, November 26, at 4:30 P.M., at the Cambridge Hospital, Mt. Auburn Street, Cambridge. Subject: Obstetrics and Gynecology (Third Session). Charles E. Mongan, M.D., Chairman.

Norfolk
Monday, November 26, at 4:00 P.M., at the Faulkner Hospital, Jamaica Plain. Subject: Surgery (First Session). Hugo B. C. Riemer, M.D., Chairman.

Friday, November 30, at 8:30 P.M., at the Norwood Hospital, Norwood. Subject: Obstetrics and Gynecology (Second Session). Hugo B. C. Riemer, M.D., Chairman.

Norfolk South
Monday, November 26, at 8:30 P.M., at the Quincy City Hospital, Quincy. Subject: Pediatrics (Third Session). David L. Belding, M.D., Chairman.

Plymouth
Tuesday, November 27, at 4:00 P.M., at the Brockton Hospital, Brockton. Subject: Surgery (First Session). Walter H. Pulsifer, M.D., Chairman.

Worcester
Wednesday, November 28, at 7:30 P.M., in the Auditorium of the Nurses' Home of the Memorial Hospital, Worcester. Subject: Surgery: (Third Session). Erwin C. Miller, M.D., Chairman.

Worcester North (Ayer Section)
Thursday, December 6, at 8:00 P.M., at the Ayer Community Memorial Hospital, Ayer. Subject: Industrial Medicine (Second Session). Frank S. Bukeley, M.D., Chairman.

Worcester North (Fitchburg Section)
Friday, November 30, at 4:30 P.M., at the Burbank Hospital, Fitchburg. Subject: Surgery (Second Session). Edward A. Adams, M.D., Chairman.

NOTICES

ANNOUNCEMENT CONCERNING A REGISTRY OF BRAIN TUMORS

A series of some two thousand tumors of the central nervous system collected by Dr. Harvey Cushing during his period of service at the Johns Hopkins Hospital and the Peter Bent Brigham Hospital has been brought to the Yale School of Medicine and put under the curatorship of the undersigned. It is intended that these elaborately catalogued specimens should so far as possible be made useful to those interested in the subject, and it is hoped that the collection will be added to from many sources.

There are many problems relating to tumor classification and expectancy of life after tumor removal that are as yet unsolved. Hence this series of cases may be of help to those who will encounter rare tumors that they wish to have identified if possible, and concerning which they may desire information, particularly on the basis of type-prognosis.

Anyone who may feel inclined to send specimens for diagnosis or may seek information of other sorts is welcome to do so.

The following persons, several of them already familiar with much of the material, have kindly consented to act as an advisory board:

Percival Bailey, University of Chicago.
F. C. Grant, University of Pennsylvania.
S. C. Harvey, Yale University.

G. J. Heuer, Cornell University.
Wilder Penfield, McGill University.
Ernest Sachs, Washington University.
W. P. Van Wagenen, University of Rochester.
S. B. Wolbach, Harvard University.

LOUISE EISENHARDT, M.D.

New Haven Hospital.

APPLICATIONS FOR SPACE IN THE SCIENTIFIC EXHIBIT OF THE AMERICAN MEDICAL ASSOCIATION

Application blanks are now available for space in the Scientific Exhibit at the Atlantic City Session of the American Medical Association, June 10-14, 1935. The Committee on Scientific Exhibit requires that all applications be filled out on the regular form and requests that this be done as early as convenient. Applications close February 25, 1935.

Persons desiring application blanks should address a request to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

THE EDWARD K. DUNHAM LECTURES FOR THE PROMOTION OF THE MEDICAL SCIENCES

1934-35

THE EDWARD K. DUNHAM LECTURESHIP

In 1923 there was founded in memory of Dr. Edward K. Dunham (M.D., Harvard, 1886), the Edward K. Dunham Lectureship for the Promotion of the Medical Sciences. Among the useful purposes for which the Foundation was established was that of binding closer "the bonds of fellowship and understanding between students and investigators in this and foreign countries". The lecturers are chosen from "eminent investigators and teachers in one of the branches of the Medical Sciences, or of the basic Sciences which contribute towards the advance of Medical Science in the broadest sense". The lectures, which are given annually, are "free and open to the faculty and students of the Harvard Medical School and College, and all other interested professional persons who may profit by them".

The Faculty of Medicine of Harvard University has issued invitations to the profession to attend three lectures to be given under the Edward K. Dunham Lectureship for the Promotion of the Medical Sciences on

"Problems Concerning the Pathogenesis of Infectious Diseases"

Tuesday, December 4, "Distribution of dyes, drugs and toxins in the animal body."

Thursday, December 6, "Distribution of dyes, drugs and toxins in the animal body" (continued).

Tuesday, December 11, "The pathogenesis of diphtheria."

At five o'clock at the Harvard Medical School, Amphitheater, Building C, by Ulrich Friedemann, M.D., formerly Professor at the University of Berlin and Director of the Division of Infectious Diseases, Virchow Krankenhaus.

PREVIOUS LECTURERS ON THE EDWARD K. DUNHAM FOUNDATION

1924-25: Willem Einthoven, M.D., Ph.D., LL.D., Nobel Laureate, Professor of Physiology, University of Leyden.

1925-26: Ross Granville Harrison, Ph.D., M.D., Professor of Comparative Anatomy, Yale University.

1926-27: Richard Willstätter, Ph.D., M.D. (hon.), Nobel Laureate, Privy Councillor, and Professor in the University of Munich.

1927-28: Sir Charles Scott Sherrington, O.M., M.D., LL.D., Nobel Laureate, Professor of Physiology, Oxford University.

1928-29: Louis Lapicque, M.D., D.Sc., LL.D., Professor of General Physiology at The Sorbonne.

1929-30: Joseph Barcroft, C.B.E., M.A., M.D., (hon.), Professor of Physiology, Cambridge University.

1930-31: Franz Knoop, M.D., Professor of Physiological Chemistry, University of Tübingen.

1931-32: Ludwig Pick, M.D., Professor of Pathology, University of Berlin.

1932-33: Otto Loewi, M.D., Professor of Pharmacology, University of Graz.

1933-34: Otto Lous Mohr, M.D., Professor of Medicine, The Royal Frederiks University, Oslo.

REMOVALS

ISADORE GREEN, M.D., announces the removal of his office to 636 Beacon Street, Boston.

STUART E. KROHN, M.D., announces his change of address from 636 Beacon Street, Boston, to 5 Freemont Street, Gloversville, New York.

AN ADDRESS BY DR. GEORGE LEVENE

On Tuesday, November 27, at 8:15 P.M., Dr. George Levene, Roentgenologist to the Massachusetts Memorial Hospitals of Boston, Massachusetts, will speak on "Roentgenological Evidence of Cranial Dysplasias of Pituitary Origin" at the Reception Building of the State Hospital for Mental Diseases, Howard, Rhode Island.

REPORTS AND NOTICES OF MEETINGS

HARVARD MEDICAL SOCIETY

A meeting of the Harvard Medical Society was held in the amphitheatre of the Peter Bent Brigham Hospital on the evening of October 23. Dr. Ingalls presented the case of a man forty-four years old, who, seven months ago, had an attack of acute bronchitis, since which time he has had gradually increasing dropsy of the legs and occasionally of the arms. A diagnosis of nephrosis was made at the Beth Israel Hospital, and he was treated with a

high protein diet and salyrgan. This treatment was temporarily successful, but he was admitted three months ago to the Peter Bent Brigham Hospital with a moderate anemia, edema of the legs and about the sacrum, and a moderately enlarged heart. His urine had a specific gravity of 1.010, a trace of albumen, two to five white blood cells per high power field, and many granular casts. The cholesterol was 400 milligrams per cent and the total protein 3.7 with an inversion of the albumen-globulin ratio. He was put on a cardiac régime and lost twenty-two pounds in one month. In the past month his total protein has been raised to 4.9 by the forced administration of liver.

Dr. Dumphy presented a forty-three year old Italian shoemaker, who came in with marked swelling, tenderness, and fluctuation of the left buttock close to the anus. His white count was 20,000. A diagnosis of ischio-rectal abscess was made and it was incised. On the third day postoperatively he became distended and tender in the left lower quadrant. Abdominal incision was made extraperitoneally and a purulent mass opened. After a thirty-day period of sepsis his temperature subsided. In the first week, his fluid intake was twenty litres, as against four litres output. In the second, his intake was twenty-four litres, with six litres output, while after the subsidence of his temperature he drank twenty litres and passed eight litres. Dr. Cutler pointed out that he believed that the large amount of fluids had definitely helped this man. Dr. Smith-Petersen suggested an early bone infection causing the groin tumor and retroperitoneal sepsis and reëxamined the x-ray plates with Dr. Sosman.

The speaker of the evening, Dr. Frederick A. Coller, Professor of Surgery, University of Michigan, was introduced by Dr. Cutler. Dr. Coller spoke on "Water Losses in Surgical Patients." A healthy man maintains a water balance naturally by hunger and thirst, but many sick patients cannot use the gastro-intestinal tract for ingestion of water, and it must be supplied by other routes. The total water intake is obtained by drinking, and from the water in the food, and from the water derived from the oxidation of food. The water content of the food is about seventy-five per cent in potatoes, eighty per cent in vegetables, and sixty to seventy per cent in meat. A regular hospital diet contains one litre of water a day, while a soft diet contains about one-half litre a day. Normally two hundred to four hundred grams of water are derived daily from the oxidation of food and the total amount of water derived from food, both in the tissues and by oxidation, amounts to over ninety-one per cent of the original weight of food. In starvation the tissues of the body are used for food supply with two hundred and fifty grams of water a day. There are about thirty-five grams of solids excreted normally by the kidneys each day, and about four hundred and seventy-five grams of water are needed to excrete this. In kidney disease, depending on the specific gravity of the urine excreted, the patient may need up to fifteen hundred grams of water to get rid of this solid matter. Unless there is a diarrhea, the water contained in the stools is not important.

Dr. Coller spoke of the insensible loss of weight as that weight which is lost after the above factors have been considered. It is chiefly due to the loss of water vapor, which is extruded by the skin to maintain the body temperature at a proper level ("insensible perspiration"). About three-quarters of the amount of heat lost from the body surface is lost by radiation, the other quarter being taken care of by the vaporization of water. In hard labor with the body sweating, one hundred per cent of the heat lost may be by water vapor.

Normally there are about seventeen hundred cubic centimeters of water lost in the urine, one thousand cubic centimeters lost in the stool, and fifteen hundred cubic centimeters lost by the insensible water loss. Dr. Coller has studied the water balance on patients during and after operations. By careful measurement of all losses of water he found the total fluid loss to vary from two litres to less than one hundred cubic centimeters. In the recovery period it was found that if the usual hot water bottles and blankets were used on the patient, there was a much higher insensible water loss, it being three or four times that of normal. In another group using the light covering that a normal person would require, the loss was much less. About one litre of water is lost during an operation and in the four-hour postoperative period. About three-quarters of this is insensible water loss. The blood loss during operation is much more than most surgeons realize, the venous ooze being very important in this respect.

By the abolition of the "ether bed" he has lowered the insensible water loss appreciably and increased the urinary output in the postoperative period. He also keeps the operating rooms at a lower temperature. He presented a series of actual cases on which the water balance was carefully studied before, during, and after operation. In one case of a lung infection of a person thirty years old, an average of two litres a day was lost through the skin and lungs, and this is true of infections of any type. In hyperthyroidism with a basal metabolic rate of plus fifty, two litres are usually lost this way.

In dehydration the developing anuria may be due to the negative water balance and Dr. Coller presented a form used by him to determine an exact water balance. All fluids lost from the body of the patient are measured and two litres are allowed for the insensible loss. Since it is desirable to have fifteen hundred cubic centimeters of urine a day, he figures that amount into his balance sheet. Then he carefully regulates the fluid intake by all methods to equal the calculated water loss. He believes it is difficult to give too much water, but unnecessary to give more than the calculated amount.

In the discussion of this paper Dr. Christian pointed out that we should consider medical and

surgical patients as fundamentally the same and that each individual patient varies somewhat from all others, and should never be treated by routine measures. This is particularly important in fluid administration. He has seen circulatory failure as the result of an excess of water and he considers that there are just two indications for an excess of fluid intake, the first being dehydration, and the second obstruction of the urinary tract with retention. There may be actual damage to the kidney by putting out an excess of urine, and two or three days of anuria may be preferable to an excess of urinary output.

Dr. Bock spoke on his observations on heat cramps in men doing hard labor in high temperatures, where they may lose from eight to eleven litres of water in eight hours. He spoke of the recovery of seventy-three grams of salt from one man's shirt worn for five days, and he stressed the importance of a salt balance. This is particularly true in the surgical patient who may be losing a lot of salt, and who cannot retain water without the replacement of that salt.

Dr. Quinby spoke on the relationship of water balance to diseased kidneys. Dr. Cutler spoke of symptoms that are sometimes caused by the restriction of fluids in cases of increased intracranial pressure. Dr. Coller closed the discussion by saying that he routinely gives one litre of normal saline solution for every litre lost from the gastro-intestinal tract, while he replaces the insensible loss of water, not including sweat, by glucose solution, since there is very little salt present in the water lost in this way.

THE GEORGE W. GAY LECTURE ON "MEDICAL ETHICS"

The George W. Gay lecture on "Medical Ethics" was delivered at the Harvard Medical School on November 1 by Dr. Arthur H. Ruggles of Providence, Rhode Island. After a brief introduction by Dr. Richard Miller, Dr. Ruggles started his lecture on "Understanding the Individual Patient" by pointing out that the well-trained surgeon should get ninety per cent recoveries, but that the best surgeons try to raise this to ninety-five per cent. This can only be done by understanding the individual patient. In order to accomplish the greatest success in medicine, the physician must take into consideration the total situation, and must remember that there is a motive behind every type of reaction. It is well known that illness may be a method used either consciously or unconsciously by the patient to escape unpleasant situations, and we must evaluate the degree of incapacity that a definite physical ailment should give.

However, the great importance of a careful physical examination and the interpretation of reliable laboratory data, before any psychological study is begun, cannot be stressed too much. The doctor should listen patiently to the history without interruption, and, above all, should never appear in a hurry, if he wishes to give his patient the feeling of security, of which he is desirous.

In general, there are two types of individuals; first, extroverts, and secondly, introverts, the latter tending to give expression to their conflicts by means of subjective symptoms. It is to be remembered that certain physical difficulties, for instance, hyperthyroidism, give rise to definite mental symptoms. In regard to the treatment of psychoneurotic patients, it is inadequate to say, "You'll be all right," or "Go to Europe," and the doctor who practices this sort of therapy will find his patients in the hands of the charlatan, because the latter is a better psychologist.

Taking as a definite example, alcoholism, Dr. Ruggles said that the treatment of this condition with sedatives, or by discipline and segregation, is notoriously unsuccessful, and that psychological treatment is of far more value, as indeed it is in all chronic diseases. There is a certain class of people who depend on and need security. They go to the doctor for reassurance and if they do not receive it from him, they go elsewhere. A simple straightforward, honest approach to the difficulty that is troubling the patient is the best means of meeting the problem. The physician should not project his own problems and feelings into his practice.

A greater interest in human behavior, and a closer relationship with the patient, together with an honest attempt to give that patient a better understanding of himself, should be the aim of every physician. Dr. Ruggles closed his lecture by pointing out the necessity of knowing when to call a consultant, a procedure as necessary in psychological problems as in other branches of medicine.

SOUTHEASTERN BRANCH OF THE AMERICAN UROLOGICAL ASSOCIATION

This meeting will be held at the Biltmore Hotel, Atlanta, Georgia, on December 7 and 8, 1934.

An excellent program has been arranged.

For information address Dr. Earl Floyd, Secretary, Atlanta Biltmore Hotel, Atlanta, Georgia.

NEW ENGLAND DERMATOLOGICAL SOCIETY

The next meeting of the New England Dermatological Society will be held on Wednesday, December 12, 3 P.M., at the Boston City Hospital.

J. HARPER BLAISDELL, M.D., *Secretary.*

NEW ENGLAND OBSTETRICAL AND GYNECOLOGICAL SOCIETY

The sixth annual meeting of the New England Obstetrical and Gynecological Society will take place in Boston on Wednesday, December 12, 1934, with headquarters at the Boston University Club where

a buffet lunch will be served at noon and a dinner in the evening.

Clinics will be held in the morning at the Free Hospital for Women, St. Elizabeth's Hospital, and the Beth Israel Hospital, and in the afternoon at the Carney Hospital and the Boston City Hospital.

The speaker of the evening will be announced later.

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance) Tuesday evening, November 27, at 8:15 P.M.

PROGRAM

Presentation of Cases.

Oscillometry in Medicine. By Dr. Alfred Friedlander, Dean, University of Cincinnati, College of Medicine.

Recent Advances in the Treatment of Obliterative Arterial Diseases of the Extremities. By Dr. Louis G. Herrmann, Assistant Professor of Surgery, University of Cincinnati, College of Medicine.

MARSHALL N. FULTON, M.D., *Secretary.*

NORFOLK DISTRICT MEDICAL SOCIETY

A regular meeting of the Society will be held in the Hotel Kenmore, Boston, Tuesday evening, November 27, 1934, at 8:00 P.M. Telephone Kenmore 2770.

Communications: "Legal and Economic Aspects of the Practice of Medicine." Senator John D. Mackay and Dr. Charles E. Mongan.

Business.

Collation.

FRANK S. CRUICKSHANK, M.D., *Secretary.*

1695 Beacon Street.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

November 22—Clinic at the Peter Bent Brigham Hospital will be given by Dr. Henry A. Christian at 3:30 P.M.

November 26—New England Heart Association will meet in the amphitheatre of the Mallory Institute of Pathology of the Boston City Hospital (entrance on Massachusetts Avenue near Albany Street) at 8:15 P.M.

November 27—Harvard Medical Society. See notice above.

December 3-7—The Radiological Society of North America. See notice on page 562, issue of September 20.

December 4, 6, 11—The Edward K. Dunham Lectures. See page 989.

December 6-8—Annual Conference of the National Society for the Prevention of Blindness. See page 736, issue of October 18.

December 7 and 8—Southeastern Branch of the American Urological Association. See page 991.

MASSACHUSETTS DIETETIC ASSOCIATION

December 11—Tuesday, 8 P.M. "Food Allergy," Dr. Frank N. Allan, Department of Medicine, Lahey Clinic.

January 8—Tuesday, 8 P.M. "Careers and Natural Abilities," Professor Johnson O'Connor, Human Engineering Laboratory, Stevens Institute of Technology, Hoboken, N. J.

February 12—Tuesday, 8 P.M. "Diabetic Children," Dr. Priscilla White, Joslin Diabetic Unit.

March 12—Tuesday, 8 P.M. "The Effect of Diet on Anemia," Dr. Lewis Diamond, Instructor in Medicine, Harvard University Medical School, Associate Physician, Children's Hospital.

March 19—Tuesday, 2 P.M. Field Trip: Visit Storehouse, First National Stores.

April 9—Tuesday, 8 P.M. "Small Hospital Problems," Miss Margaret Copeland, Superintendent, Free Hospital for Women.

December 12—New England Dermatological Society. See page 991.

December 12—New England Obstetrical and Gynecological Society. See page 991.

April 29 - May 3, 1935—The American College of Physicians will meet at Philadelphia. For information address Mr. E. R. Loveland, Executive Secretary, 133-135 South 36th Street, Philadelphia, Pa.

June, 1935—Medical Library Association will meet in Rochester, N. Y. For details address the Secretary: Miss Frances N. A. Whitman, Librarian, Harvard University Schools of Medicine and Public Health, Boston, Mass.

DISTRICT MEDICAL SOCIETIES

ESSEX NORTH DISTRICT MEDICAL SOCIETY

The Semi-Annual Meeting will be held in January and the Annual Meeting in May, time, place and subject to be announced.

E. S. BAGNALL, M.D., Secretary.

FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings will be held on the second Tuesday of January, March, and May at the Weldon Hotel, Greenfield, Mass.

CHARLES MOLINE, M.D., Secretary.

Sunderland.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

January 9, 1935—Melrose.
March 13, 1935—Wakefield.
May 8, 1935—Winchester.

K. L. MACLACHLAN, M.D., Secretary.

1 Bellevue Street, Melrose.

NORFOLK DISTRICT MEDICAL SOCIETY

November 27—See notice elsewhere on this page.

PLYMOUTH DISTRICT MEDICAL SOCIETY

January—Goddard Hospital.
March—Plymouth County Hospital.
April—Lakeville Sanatorium.

SUFFOLK DISTRICT MEDICAL SOCIETY

November 28—Meeting at the Boston Medical Library. Speakers: Dr. Frederick T. Lord, Dr. Edward D. Churchill, Dr. Roderick Heffron. Subject: Symposium on Pneumonia.

January 23, 1935—General Meeting in association with the Boston Medical Library. Speaker and subject to be announced later.

March 27, 1935—Clinical Meeting at the Boston Lying-In Hospital.

April 24, 1935—Clinical Meeting at the Children's Hospital.

The medical profession is cordially invited to attend all of these meetings.

ROBERT L. DeNORMANDIE, M.D., President.
GEORGE P. REYNOLDS, M.D., Secretary.
HENRY T. HUTCHINS, M.D., Boston Medical Library.

WORCESTER DISTRICT MEDICAL SOCIETY

December 12—Wednesday evening. St. Vincent Hospital, Worcester, Mass. 6:30 P.M.: Dinner. 7:30 P.M.: Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Dinner complimentary by the Hospital.

January 9, 1935—Wednesday evening. Worcester City Hospital, Worcester, Mass. 6:30 P.M.: Buffet supper. 7:30 P.M.: Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Buffet supper complimentary by the Hospital.

February 13, 1935—Wednesday evening. Worcester State Hospital, Worcester, Mass. 6:30 P.M.: Dinner. 7:30 P.M.: Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Dinner complimentary by the Hospital.

March 13, 1935—Wednesday evening. The Memorial Hospital, Worcester, Mass. 6:30 P.M.: Buffet supper. 7:30 P.M.: Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Buffet supper complimentary by the Hospital.

April 10, 1935—Wednesday evening. Worcester Hahnemann Hospital, Worcester, Mass. 6:30 P.M.: Dinner. 7:30 P.M.: Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Dinner complimentary by the Hospital.

May 8, 1935—Wednesday afternoon and evening. Annual Meeting of the Worcester District Medical Society. The time and place of this meeting will be announced later.

ERWIN C. MILLER, M.D., Secretary.

27 Elm Street, Worcester.